DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH

Fiscal Year 2009 Budget Request

Witness appearing before the
House Subcommittee on Labor-HHS-Education Appropriations

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National Institute of Arthritis and Musculoskeletal and Skin Diseases

March 5, 2008

Richard J. Turman, Deputy Assistant Secretary, Budget

Mr. Chairman and Members of the Committee:

I am pleased to present the Fiscal Year (FY) 2009 President's budget request for the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS). The Fiscal Year (FY) 2009 budget of $509,080,000 includes an increase of $494,000 over the FY 2008 appropriated level of $508,586,000.

INTRODUCTION

The past 25 years have seen a major shift in the U.S. from a focus on acute conditions which often result in early mortality, to chronic diseases which greatly impact quality of life. The research programs of the NIAMS include many of these common, chronic disorders, such as osteoarthritis and osteoporosis, which affect millions of Americans across all segments of society. Collectively, the burden of these diseases in physical, economic, and social terms is significant – and growing as the U.S. population ages. For example, the Centers for Disease Control and Prevention report that over the next 25 years, an estimated 67 million adults aged 18 years and older will have doctor-diagnosed arthritis, compared with approximately 46 million today. Likewise, the number of individuals affected by osteoporosis continues to rise. According to data recently published by the *Journal of Bone and Mineral Research*, in the coming 2 decades, an estimated 3 million people in the U.S. will suffer from osteoporosis-related fractures – a 50 percent increase from the 2005 figure of 2 million. The NIAMS is committed to reducing the disability and health care costs associated with these and other diseases by supporting research across the spectrum of basic, translational, and clinical studies, with a special emphasis on work that has the potential to benefit patients directly.

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PREVENTIVE MEDICINE

The NIAMS continues to place a high-priority on identifying risk factors for chronic diseases, in an effort to facilitate the early identification of signs and symptoms, and to develop interventions that are more effective. The devastating consequences of low bone mass, for example, are preventable; but first, people who are at risk for osteoporotic fractures must be identified. Much of what is known about factors influencing bone density has come from two long-standing, NIH-supported research

projects that continue to benefit patients. Most recently, researchers demonstrated that when someone aged 65 years or more breaks a bone, that person should be screened for osteoporosis—even if the fracture occurred because of a highly traumatic injury (e.g., a fall from a ladder or an auto accident) that could hurt a healthy young person. Other new data demonstrated that older men and women taking selective serotonin reuptake inhibitors (a popular class of antidepressants) are prone to increased bone loss and should be particularly vigilant about their bone health.

Preventive medicine in the coming decades depends on more than just knowing who is at risk for a disease—interventions also must be available. One barrier to finding drugs that halt the painful joint degradation that characterizes osteoarthritis is the lack of objective, measurable standards of disease progression by which new compounds can be evaluated. To overcome this problem and speed testing of potential therapies, the NIH is continuing its partnership with private sponsors (and with input from the Food and Drug Administration) to support the Osteoarthritis Initiative (OAI), a publicly available research resource that investigators can use to identify and evaluate biomarkers of OA. Through this effort, scientists are collecting and archiving biological specimens, images, and clinical data from nearly 4,800 women and men aged 45 years or older at high risk for developing knee OA. By the end of FY 2007, more than 600 researchers from over 40 countries had registered to access the data collected through this initiative, and 555 clinical datasets had been downloaded for analysis.

Strategies to engineer or regenerate biologically active tissues also may prevent some of the disabling conditions that affect Americans as they age. Today, common sports injuries to the anterior cruciate ligament (ACL) of the knee place people at risk for developing OA later in life, even if they receive state-of-the-art surgical and rehabilitative care. NIAMS-funded researchers are exploring new methods to enhance recovery from these debilitating injuries—continued progress may allow the next generation of young athletes to avoid post-traumatic knee OA completely.

Other NIAMS-funded teams have made progress on cell- and gene-based therapies to repair the skin. Preclinical advances in treating a rare, inherited, blistering skin disease known as recessive dystrophic epidermolysis bullosa, for example, may someday hold promise for strategies to heal or prevent chronic wounds associated with common conditions such as diabetic skin ulcers. Recent progress also comes from longstanding support for fundamental skin research that laid the foundation for several breakthroughs about the potential of non-embryonic stem cells. The finding that adult skin cells can be changed to resemble embryonic stem cells, for example, builds directly on NIAMS-funded basic research and opens the door for further work on this readily-accessible cell source. Another important advance came directly from NIAMS-funded researchers when they generated cloned mice from stem cells of adult mouse hair follicles. In the future, scientists may be able to use the same technique with stem cells from adult humans to generate patient-specific cell lines that could replace damaged or diseased organs without the risk of immune rejection currently associated with organ transplantation.

COMPLEX GENETIC DISEASES

The NIAMS continues to mine the explosion of information related to genomics to better understand the causes of complex genetic diseases, and how best to treat and prevent them. This year, scientists supported by the Institute identified several genes associated with susceptibility to rheumatoid arthritis and systemic lupus erythematosus, or lupus. Like many autoimmune diseases, rheumatoid arthritis and lupus are complex; their occurrence and disease course vary across patient populations. As a result, many small genetic differences, known as single nucleotide polymorphisms, or SNPs, probably contribute collectively to the disease. One study of rheumatoid arthritis patient samples pinpointed changes in a region of chromosome 9, which contains genes involved in chronic inflammation that could be potential targets for the development of new arthritis therapies. In another study, the same SNPs were found in both rheumatoid arthritis and lupus patient samples, for a molecule that is important to immune regulation. This finding suggests that these two autoimmune, inflammatory diseases share a molecular pathway, which may aid further research and treatment approaches.

In FY 2009, the NIAMS will enhance its efforts in this area, by continuing support of genome-wide association studies (GWAS) for diseases of interest to the Institute. Such work will likely focus on phenotypic analyses and replication studies for autoimmune diseases, such as psoriasis, and musculoskeletal disorders, such as osteoporosis, which collectively affect millions of Americans. These new activities would build on investments being made at the NIH level, including those through the Genetic Association Information Network. With advances in high-throughput technology, researchers engaged in large-scale GWAS are now able to examine genetic variations in a shorter time frame and at a much lower cost. In the Institute's intramural research program, sample collection is underway for a GWAS of Behcet's disease, a complex disorder of inflammation affecting skin, joints, eyes, gastrointestinal tract, lungs, and vasculature. NIH researchers have obtained new technology to examine these data to identify susceptibility genes that could be used to develop targeted treatments. Over time, identification of the genetic bases of these conditions could lead to new predictive, preventive, diagnostic, and therapeutic approaches.

TRANSLATIONAL AND CLINICAL RESEARCH

As researchers increase the pace at which they can study complex issues, the NIAMS must improve the infrastructure that will allow their findings to be translated into strategies to improve patient care and public health. The NIAMS responded to this need with a new program, the Centers of Research Translation (CORT), to bring together basic and clinical researchers in a way that helps convert basic discoveries into new drugs, treatments, and diagnostics. The existing Centers, which will continue through FY 2011 and 2012, address lupus, orthopaedic trauma and joint injuries, psoriasis, a genetic form of rickets (a childhood disorder characterized by a softening and weakening of bones), and scleroderma. The NIAMS also participates in the Senator Paul D. Wellstone Muscular Dystrophy Cooperative Research Centers program, where scientists conduct basic, translational, and clinical research on treatments for various muscular dystrophies. To better capitalize on the wealth of basic advances coming from muscular dystrophy researchers at the Centers and elsewhere, the program will shift its focus toward additional translational and clinical studies when it is renewed later in FY 2008.

In the area of skin, chronic wounds, commonly found in elderly, bed-ridden, and diabetic populations, and scar formation associated with wound healing, particularly in burn patients, are major contributors to the burden of disease. Development of therapies for chronic wounds and scar minimization require a better understanding of the normal wound healing process, and the differences between wound healing in acute and chronic wounds. The Institute supports substantial research on multiple aspects of wound healing to provide an understanding of the cells and processes involved. Translational research projects are using the findings from these projects, as well as discoveries in regenerative medicine, for the development of potential therapies to benefit the patients of tomorrow.

CONCLUSION

In the coming year, the NIAMS will enhance its support for well-trained scientists to carry out research on diseases of the bones, muscles, joints, and skin. In this vein, the Institute will implement key recommendations from a recent, external evaluation of its training and career development programs, and fund new activities to build interdisciplinary partnerships that reflect the scale and complexity of today's biomedical research problems. In addition, efforts to develop and disseminate science-based health information to diverse populations will remain a major focus, with particular emphasis on outreach to underserved groups. Collectively, the research, training, and health information programs of the NIAMS have spurred significant advances in the understanding of many common, chronic, costly diseases. Looking forward, this progress will serve as a strong foundation for future promise – an era in which the burden of these conditions is reduced and, over time, eliminated for the millions of adults and children in the U.S. who are affected by them.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

Biographical Sketch

NAME : Stephen I. Katz, M.D., Ph.D.

POSITION : Director, National Institute of Arthritis and Musculoskeletal and Skin Diseases, NIH

BIRTHPLACE: Brooklyn, New York

DATE : January 26, 1941

EDUCATION : B.A. (Honors), University of Maryland, 1962
M.D., (Honors), Tulane University School of Medicine, 1966
Ph.D., (Immunology), University of London, 1974

EXPERIENCE

8/95-present	:	Director, National Institute of Arthritis and Musculoskeletal and Skin Diseases, NIH
10/01-present	:	Senior Investigator, Dermatology Branch, National Cancer Institute, NIH
7/93-8/95	:	Acting Chairman, Dermatology Dept., Uniformed Services University of the Health Sciences (USUHS), Bethesda, MD
2/89-8/95	:	Marion B. Sulzberger Professor of Dermatology, USUHS, Bethesda, MD
11/80-10/01	:	Chief, Dermatology Branch, National Cancer Institute, NIH
6/77-11/80	:	Acting Chief, Dermatology Branch, National Cancer Inst., NIH
9/74-6/77	:	Senior Investigator (Dermatology), Dermatology Branch, National Cancer Institute, NIH
1972-1974	:	Research Fellow, Department of Pathology, Royal College of Surgeons of England
1967-1970	:	Dermatology Resident, University of Miami School of Medicine
1966-1967	:	Straight Medical Internship, Los Angeles County Hospital

PROFESSIONAL ORGANIZATIONS

1997-2002	:	President, International Committee for Dermatology and International League of Dermatological Societies
1993-1994	:	President, Society for Investigative Dermatology
1992-present	:	Member, Institute of Medicine of the National Academy of Sciences
1991-1995	:	Secretary-Treasurer, Clinical Immunology Society
1988-1995	:	Director, American Board of Dermatology
1987-1992	:	Secretary-General, 18th World Congress of Dermatology

1984-1999 : Association of Professors of Dermatology
1971-present : American Academy of Dermatology

HONORS AND AWARDS

2007 : Marriott Lifetime Achievement Award from the Arthritis Foundation
2007 : "Change It" Champion 2007 Award, Parent Project Muscular Dystrophy
2006 : NIH Harvey J. Bullock, Jr. EEO Award
2006 : Excellence in Leadership Award, International Pemphigus Foundation
2005 : Master Dermatologist Award, American Academy of Dermatology
2005 : NIH Undergraduate Scholarship Program Recognition Award
2004 : Doctorem Honoris Causa, Semmelweis University, Budapest, Hungary
2003 : Lifetime Achievement Award from the American Skin Association
2003 : Michael Feiwel Lecture, Royal Society of Medicine, London
2003 : Doctoris Medicinae Gradum Honoris Causa, University of Munich
2002 : Alfred Marchionini Gold Medal for contributions to dermatology internationally
2000 : Presidential Executive Meritorious Rank Award, U.S. Government
2000 : Presidential Citation, American Academy of Dermatology
1999 : Fleur-de-lis Award for Outstanding Service of the Lupus Foundation of America
1998 : First Scientific Leadership Award of the S.L.E. Foundation
1998 : Dermatitis Research Award of the American Skin Association. Presented at the Society of Investigative Dermatology
1998 : Presidential Distinguished Rank Award, U.S. Government
1997 : Stephen Rothman Award of the Society of Investigative Dermatology
1996 : Outstanding Alumnus Award of Tulane University Medical School
1996 : D. Martin Carter Mentor Award from the American Skin Association
1996 : Distinguished Service Medal, Uniformed Services University of the Health Sciences
1994 : Presidential Executive Meritorious Rank Award, U.S. Government
1992 : Election into Institute of Medicine of the National Academy of Sciences
1989 : NIH Director's Award
1985 : Distinguished Service Award of the U.S. Public Health Services, DHHS highest award
1984 : First Annual Marion B. Sulzberger Professor of the Year Award given by the American Academy of Dermatology
1981 : Superior Service Award of the Public Health Service
1981 : William Montagna Award of the Society for Investigative Dermatology

Department of Health and Human Services
Office of Budget
Richard J. Turman

Mr. Turman is the Deputy Assistant Secretary for Budget, HHS. He joined federal service as a Presidential Management Intern in 1987 at the Office of Management and Budget, where he worked as a Budget Examiner and later as a Branch Chief. He has worked as a Legislative Assistant in the Senate, as the Director of Federal Relations for an association of research universities, and as the Associate Director for Budget of the National Institutes of Health. He received a Bachelor's Degree from the University of California, Santa Cruz, and a Masters in Public Policy from the University of California, Berkeley.