DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH

Fiscal Year 2002 Budget Request

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

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DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

National Institute of Biomedical Imaging and Bioengineering

Statement of the Acting Director

Mr. Chairman and Members of the Committee:

I am pleased to present the President's budget request for the National Institute of Biomedical Imaging and Bioengineering (NIBIB) for FY 2002, a sum of $40,206,000, which reflects an increase of $38,231,000 over the comparable Fiscal Year 2001 appropriation.

At the outset, I should note that the NIBIB is the newest of NIH's Institutes, having been established on December 29, 2000 by P.L. 106-580, the National Institute of Biomedical Imaging and Bioengineering Establishment Act of 2000. I am excited by the challenge afforded me to help guide the formation and early development of this newest member of the NIH family. In the past four months, we have begun to consider the new opportunities in biomedical research that NIBIB can foster and have articulated the basic principles upon which we will build NIBIB. It is my privilege to share with you the philosophy under which the NIBIB will operate and our initial steps toward fulfilling the promises embodied in the legislation.

A MISSION OF PROMISE

The foundations of tomorrow's medicine will continue to be built on the emergence of discoveries in basic science and development of new technologies. The

mission of NIBIB is to apply the principles of engineering and imaging science to biological systems. Advances in the imaging sciences could change the face of medicine, making it possible to non-invasively detect, diagnose, and guide therapy for a large variety of diseases. Bioengineering is unique in its ability to integrate principles from diverse fields, and to cross the boundaries of academia, science, medicine and industry. The focus of NIBIB will be on developing fundamental new knowledge, creating potent new technologies, and nurturing researchers to be able to fully integrate the quantitative sciences with biomedical research.

Bioengineering and the imaging sciences are rooted in physics, mathematics, chemistry, materials sciences, computer sciences and the life sciences. The application of these systematic, quantitative, and integrative ways of thinking about and approaching the solutions to problems will be important to biology and medical research. The biological scientist often seeks to answer such questions as "Why do things work the way they do?" and "How do these organisms function?" The engineer or imaging scientist may ask questions such as "How can I create something that has never existed before?" or "Can I develop a solution to this seemingly intractable problem?" The excitement of bringing together new research constituencies, perspectives and collaborations is a particular challenge and a unique opportunity for NIBIB.

In support of its mission, NIBIB will support an integrated and coordinated program of research and research training that can be applied to a broad spectrum of biological processes, disorders and diseases and across multiple organ systems. Strong coordination will be fostered with biomedical imaging and bioengineering programs of other NIH Institutes and other agencies so as to support imaging and engineering research with potential medical applications. These partnerships will facilitate the translation of fundamental discoveries into research on and applications for specific diseases, disorders, or biological processes.

Most of the revolutionary changes in biology and medicine over the past decades were rooted in fundamental discoveries in many different fields, such as the role of nuclear physics in producing radioisotopes essential for much of modern medical science. Engineering and physics were central in the development of key tools of common clinical practice today - - x-rays, computed tomography (CT) scanning, fiber optic viewing, laser surgery, echocardiography and fetal sonograms. Materials science is helping to develop new joints, heart valves, and other tissue mimetics. Understanding of nuclear magnetic resonance and positron emissions was required for the imaging study of the location and timing of brain activities that accompany thought, motion, sensation, speech, or drug use. Now, as never before, the boundaries are disappearing between biology and biomedical engineering, resulting in increasing and expanding opportunities for new scientific and technological approaches and new clinical tools and devices.

IDENTIFYING PRODUCTIVE NEW RESEARCH DIRECTIONS

The creation of programs on the cutting edge of research and innovation will pose complex scientific challenges and require multidisciplinary strategies. A critical component of the Institute's inaugural year will be the formulation of a strategic plan for research in biomedical imaging and bioengineering. This activity will be undertaken in cooperation with the NIBIB Advisory Council and with broad representation from the research community. An outstanding opportunity exists to recruit scientists, engineers and physicians to new areas of biomedical research through the research programs to be developed by NIBIB.

NIH has provided important groundwork that is of invaluable aid to NIBIB as it formulates an emerging research agenda. Key areas of future research in biomedical

imaging and bioengineering have been highlighted by four symposia sponsored by NIH in the last three and a half years. At these meetings, the country's leading engineers, scientists, and physician-scientists have addressed areas of opportunity in bioengineering, biomedical imaging, nanotechnology, and reparative medicine or tissue engineering.

Since one of NIH's highest priorities is the funding of medical research through research project grants, NIBIB will emphasize this mechanism to promote fundamental discoveries, design and development, and translation of technological capabilities in biomedical imaging and bioengineering, enabled by relevant areas of information science, physics, chemistry, mathematics, materials science, and computer sciences. The research supported by NIBIB will be multidisciplinary in nature and strongly synergistic with NIH's other research Institutes and Centers. NIBIB will expand the principles embodied in NIH's development of the Bioengineering Research Partnerships and Bioengineering Research Grants - - that creation, development, and implementation of technology are worthy goals.

DEVELOPING A NEW GENERATION OF RESEARCHERS

NIBIB will meet the challenge of training a new generation of investigators with a vision transcending narrow disciplines. Training and career development programs will be central to NIBIB's approach to its mission. Increasing the pool of individuals uniquely positioned to bring innovative concepts and approaches to research in biomedicine and health will benefit the entire NIH. The changing nature of biomedical research in the future points strongly toward the need to train our young physicians and engineers to succeed in facets of biomedical research that are not yet imagined.

CONCLUSION

NIBIB's leadership in developing crosscutting research and training in biomedical imaging and bioengineering will be fostered by strong partnerships and collaborations with other Institutes and Centers of NIH, all with the ultimate goal of improvement in human health and well-being. NIBIB is poised to identify challenges in biomedical research that can benefit from bioengineering approaches, facilitate interinstitute cooperation, and promote transdisciplinary training. NIBIB will strengthen and complement, not substitute for or subtract from, the already robust research programs of NIH's other Institutes and Centers. We look forward to the challenges of the next year in creating a new and enriched focus at NIH for bioengineering and imaging sciences.

The NIH budget request includes the performance information required by the Government Performance and Results Act (GPRA) of 1993. Prominent in the performance data is NIH's second annual performance report which compares our FY 2000 results to the goals in our FY 2000 performance plan. As performance trends on research outcomes emerge, the GPRA data will help NIH to identify strategies and objectives to continuously improve its programs.

The budget request for FY2002 for the National Institute of Biomedical Imaging and Bioengineering is $40.2 million.

Mr. Chairman, I will be happy to answer your questions.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

Biographical Sketch

NAME: Donna Joyce Dean, Ph.D.

POSITION: Acting Director, National Institute of Biomedical Imaging and Bioengineering and Senior Advisor to Acting Director of NIH

BIRTHPLACE AND DATE: Danville, Kentucky
April 22, 1947

EDUCATION:

A.B.	Berea College, 1969 (Chemistry)
Ph.D.	Duke University, 1974 (Biochemistry)

EXPERIENCE:

2001 -	Acting Director, NIBIB, NIH
1998- present:	Senior Advisor to Acting Director/Deputy Director, NIH
1997-1998:	Director, Division of Physiological Systems, Center for Scientific Review, NIH
1995-1997:	Acting Chief, Referral and Review Branch, Division of Research Grants, NIH
1988-1995	Chief, Biological and Physiological Sciences Review Section, Division of Research Grants, NIH
1982-1988:	Referral Officer and Scientific Review Administrator, Division of Research Grants, NIH
1979-1982:	Consumer Safety Officer, Food Additives and Veterinary Drugs, Food and Drug Administration
1977-1979:	Research Chemist, National Institute of Arthritis, Metabolism and Digestive Diseases, NIH
1974-1977:	NIH Postdoctoral Fellow, Princeton University
1968:	Research Trainee, Oak Ridge National Laboratories

PROFESSIONAL SOCIETIES: American Chemical Society, American Society for Cell Biology, American Society for Investigative Pathology, Society for the Advancement of Chicanos and Native Americans in Science, Association for Women in Science