

National Heart, Lung, and Blood Institute



Fiscal Year

1983

Fact Book

U.S. DEPARTMENT OF HEALTH
AND HUMAN SERVICES
Public Health Service
National Institutes of Health

Questions regarding any of this information should be directed to the NHLBI Information Office, National Heart, Lung, and Blood Institute, 9000 Rockville Pike, Bethesda, Maryland 20205.

National Heart, Lung, and Blood Institute

An abstract graphic consisting of several thick, black, overlapping lines that create a sense of depth and movement. These lines intersect and cross each other, forming a complex pattern. In the upper right corner, there are several thin, horizontal lines that resemble a grid or a set of axes, suggesting a data visualization or a technical drawing.

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U.S. DEPARTMENT OF HEALTH
AND HUMAN SERVICES
Public Health Service
National Institutes of Health

October 1983

For Administrative Use Only

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National Heart, Lung, and Blood Institute

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1. DIRECTORY OF PERSONNEL*

Office of the Director	Bldg.	Room	Phone
Director, Dr. Claude Lenfant	31	5A52	496-5166
Deputy Director, Dr. Peter L. Frommer	31	5A49	496-1078
Executive Officer, Mr. Jack Nance (Acting)	31	5A50	496-2411
Associate Director for Scientific Program Operation, Dr. Jay Moskowitz	31	5A03	496-6331
Associate Director for Prevention, Education, and Control, Mr. Michael F. White . . .	31	4A03A	496-5437
Assistant Director for International Programs, Dr. Ruth J. Hegyeli	31	4A10	496-5375
Special Assistant to the Director, Dr. Malvina Schweizer	31	5A03	496-3620
Assistant to the Director, Ms. Diane Shartsis Wax	31	5A52	496-6471
Office of Special Concerns, Chief, Ms. Juanita P. Cooke	31	4A05	496-1763
Office of Administrative Management, Director, Mr. Jack Nance (Acting)	31	5A50	496-2411
Deputy Executive Officer, Mr. Jack Nance	31	5A50	496-2411
Administrative Officer, Mr. Ellis E. Mullinix	31	5A46	496-5931
Financial Management Officer, Mr. James R. Wehling	31	5A10	496-4653
Personnel Officer, Ms. Peggy O'Brien	31	5A34	496-6477
Management Analysis Officer, Ms. Sheila Merritt	31	5A50	496-5931
Privacy Act Coordinator, Ms. Marion Matthews	31	5A29	496-9737
Freedom of Information Coordinator, Ms. Nancy Cherry	31	5A29	496-9737
Office of Prevention, Education, and Control, Director, Mr. Michael F. White	31	4A03A	496-5437
Chief, Public Inquiries and Reports Branch (Information Office), Ms. Terry C. Bellicha	31	4A31	496-4236
Chief, Health Education Branch, Dr. James I. Cleeman	31	4A18	496-1051
Office of Program Planning and Evaluation, Director, Dr. Jay Moskowitz	31	5A03	496-6331
Chief, Program Analysis and Evaluation Branch, Dr. Carl A. Roth	31	5A11	496-3620
Chief, Planning and Coordination Branch, Ms. Janyce E. Notopoulos	31	5A03	496-5031
Chief, Information Systems Branch, Mr. Ralph Van Wey	WW	632	496-7875

Division of Heart and Vascular Diseases

Director, Dr. Barbara Packard	FE	416A	496-2553
Deputy Director, Dr. William J. Zukel	FE	412A	496-5656
Administrative Officer, Ms. Brenda Keagan	FE	4C03A	496-5594
Associate Director for Scientific Programs, Dr. William J. Zukel (Acting)	FE	412A	496-5656
Chief, Research Training and Development Branch, Dr. Donald M. MacCanon	FE	3A08A	496-1724
Associate Director for Cardiology, Dr. Eugene R. Passamani	FE	320	496-5421
Chief, Cardiac Diseases Branch, Dr. Thomas L. Robertson	FE	3C06	496-1081
Chief, Cardiac Functions Branch, Dr. Thomas W. Nielsen	FE	304A	496-1627
Chief, Devices and Technology Branch, Dr. John T. Watson	FE	312A	496-1586

* Current as of December 31, 1983. For locating personnel not listed, the general information number is 301-496-4000. For direct dialing, the area code is 301.

FE—Federal Building, 7550 Wisconsin Avenue, Bethesda, Maryland 20205.
 WW—Westwood Building, 5333 Westbard Avenue, Bethesda, Maryland 20205.

Division of Heart and Vascular Diseases (Continued)

	Bldg.	Room	Phone
Associate Director for Arteriosclerosis, Hypertension, and Lipid Metabolism, Dr. Gardner C. McMillan	FE	4C12A	496-1613
Chief, Hypertension and Kidney Diseases Branch, Dr. Michael Horan	FE	4C108	496-1857
Chief, Lipid Metabolism–Atherogenesis Branch, Dr. Basil M. Rifkind	FE	4A14A	496-1681
Associate Director for Clinical Applications and Prevention, Dr. William T. Friedewald	FE	212A	496-2533
Chief, Behavioral Medicine Branch, Dr. Stephen Weiss	FE	604C	496-9380
Chief, Clinical Trials Branch, Dr. Curt Furberg	FE	216A	496-4323
Chief, Mathematical and Applied Statistics Branch, Dr. Janet T. Wittes	FE	2A11	496-5905
Chief, Preventive Cardiology Branch, Dr. Gerald Payne	FE	6A14B	496-2465
Associate Director for Epidemiology and Biometry, Dr. Paul Leaverton (Acting)	FE	2C08A	496-2327
Chief, Biometrics Research Branch, Dr. Robert Garrison	FE	2C06A	496-5826
Chief, Epidemiology Branch, Dr. Paul Leaverton (Acting)	FE	2C08A	496-2327

Division of Lung Diseases

Director, Dr. Suzanne S. Hurd (Acting)	WW	6A16	496-7208
Deputy Director, Dr. Suzanne S. Hurd	WW	6A15	496-7440
Associate Director for Scientific Program Operations, Dr. William R. Sanslone	WW	6A16	496-7208
Administrative Officer, Mrs. Marlyn Harrison	WW	6A16	496-7984
Chief, Airways Diseases Branch, Dr. J. Sri Ram	WW	6A11	496-7332
Chief, Interstitial Lung Diseases Branch, Dr. Carol Vreim	WW	6A03	496-7034
Chief, Prevention, Education, and Manpower Branch, Dr. Sidney Parker	WW	6A12	496-7668
Chief, Structure and Function Branch, Dr. Bitten Stripp	WW	6A03	496-7171

Division of Blood Diseases and Resources

Director, Dr. Amoz I. Chernoff	FE	518A	496-4868
Associate Director for Scientific Programs, Dr. Frances Pitlick	FE	516	496-4869
Special Assistant for Manpower Development, Dr. Fann Harding	FE	508B	496-1817
Administrative Officer, Ms. Mary C. Gall	FE	512A	496-3533
Chief, Blood Diseases Branch, Dr. Anne P. Ball	FE	5A12B	496-5911
Chief, Blood Resources Branch, Dr. George J. Nemo	FE	5A08B	496-1537
Chief, Program Planning and Prevention Branch, Mr. Allan W. Czarra	FE	520	496-4186
Chief, Sickle Cell Disease Branch, Dr. Clarice Reid	FE	504D	496-6931

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FE—Federal Building, 7550 Wisconsin Avenue, Bethesda, Maryland 20205.

WW—Westwood Building, 5333 Westbard Avenue, Bethesda, Maryland 20205.

Division of Extramural Affairs	Bldg.	Room	Phone
Director, Dr. Jerome G. Green	WW	7A17B	496-7416
Deputy Director, Dr. Henry G. Roscoe	WW	7A17A	496-7225
Associate Director for Review, Dr. Jim L. Shields	WW	557	496-7919
Chief, Office of Program Policy and Procedure, Dr. Henry G. Roscoe	WW	7A17A	496-7225
Administrative Officer, Ms. Kathleen Maguire	WW	7A11B	496-7893
Chief, Contracts Operations Branch, Mr. Robert R. Carlsen	WW	650A	496-7666
Chief, Grants Operations Branch, Mr. James M. Pike	WW	4A18A	496-7255
Chief, Review Branch, Dr. Jim L. Shields	WW	557	496-7919

Division of Intramural Research

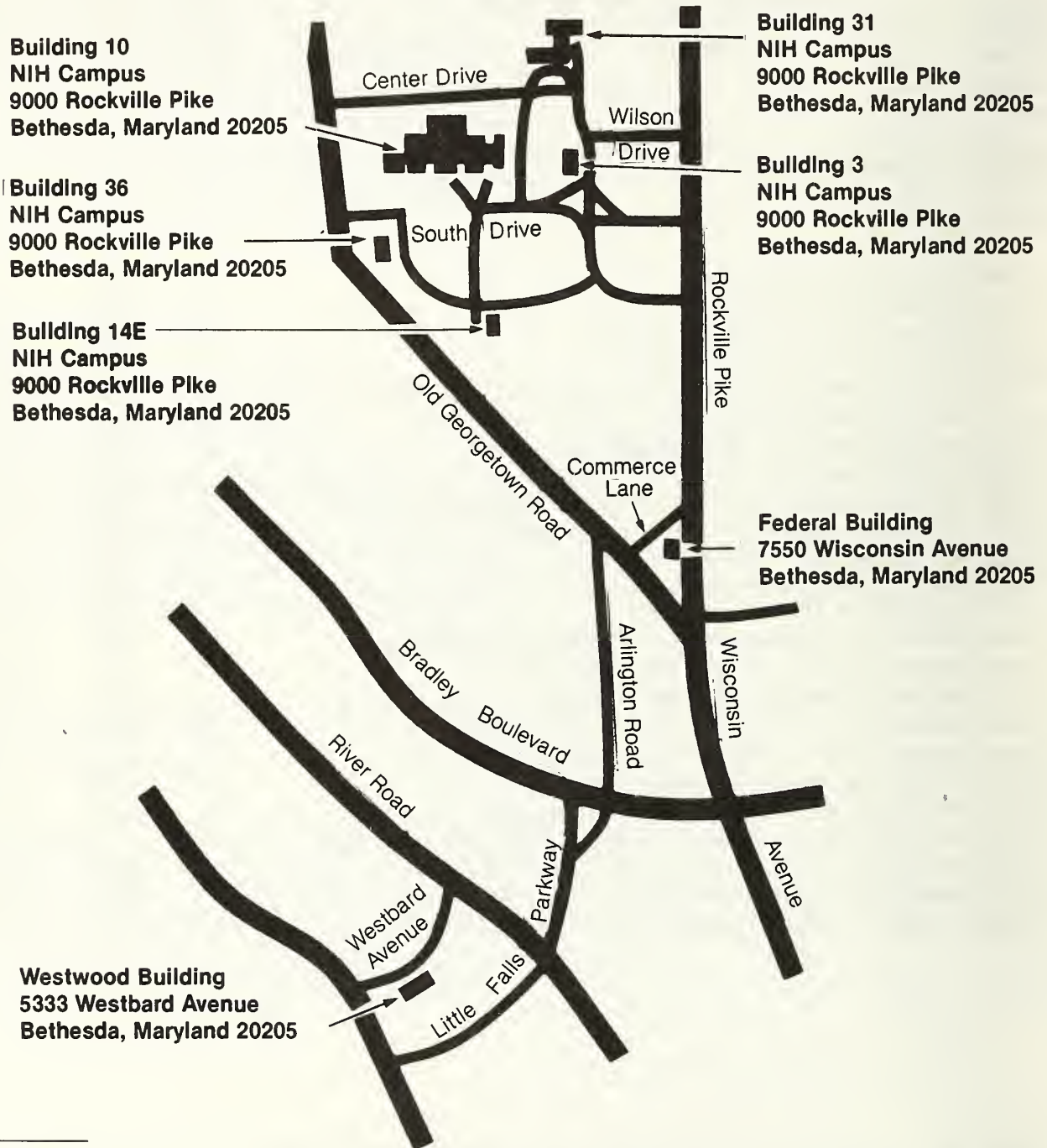
Director, Dr. Jack Orloff	10	7N214	496-2116
Deputy Director, Dr. Edward D. Korn	3	B122	496-1616
Clinical Director, Dr. Harry R. Keiser	10	8C103	496-1518
Deputy Clinical Director, Dr. Arthur R. Nienhuis	10	7C103	496-5093
Administrative Officer, Mr. Richard P. Striker	10	7N218	496-3483
Chief, Section on Laboratory Animal Medicine and Surgery, Dr. Joseph E. Pierce	14E	106B	496-9673
Chief, Section on Theoretical Biophysics, Dr. John L. Stephenson	31	4B44	496-4325
Chief, Cardiology Branch, Dr. Stephen E. Epstein	10	7B15	496-5817
Chief, Clinical Hematology Branch, Dr. Arthur R. Nienhuis	10	7C103	496-5093
Chief, Hypertension-Endocrine Branch, Dr. Harry R. Keiser (Acting)	10	8C103	496-1518
Chief, Molecular Disease Branch, Dr. H. Bryan Brewer, Jr.	10	7N117	496-5095
Chief, Pathology Branch, Dr. William C. Roberts	10	3E30	496-5203
Chief, Pulmonary Branch, Dr. Ronald G. Crystal	10	6D06	496-1597
Chief, Surgery Branch, Dr. Richard E. Clark	10	2N242	496-4285
Chief, Laboratory of Biochemical Genetics, Dr. Marshall W. Nirenberg	36	1C06	496-2401
Chief, Laboratory of Biochemistry, Dr. Earl R. Stadtman	3	222	496-4096
Chief, Laboratory of Cell Biology, Dr. Edward D. Korn	3	B122	496-1616
Chief, Laboratory of Cellular Metabolism, Dr. Martha Vaughan	10	5N307	496-4554
Chief, Laboratory of Chemical Pharmacology, Dr. James R. Gillette	10	8N117	496-2593
Chief, Laboratory of Chemistry, Dr. Henry M. Fales	10	7N318	496-2135
Chief, Laboratory of Experimental Atherosclerosis (Vacant)	10	5N113	496-4826
Chief, Laboratory of Kidney and Electrolyte Metabolism, Dr. Maurice B. Burg	10	6N307	496-3187
Chief, Laboratory of Molecular Cardiology, Dr. Robert S. Adelstein	10	8N202	496-1865
Chief, Laboratory of Molecular Hematology, Dr. W. French Anderson	10	7D20	496-5844
Chief, Laboratory of Technical Development, Dr. Robert L. Bowman	10	5D20	496-2557

For locating personnel not listed, the general information number is 301-496-4000. For direct dialing, the area code is 301.

FE—Federal Building, 7550 Wisconsin Avenue, Bethesda, Maryland 20205.

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Location of Buildings Occupied by NHLBI Personnel*



* Not to scale.

2. PROGRAM STRUCTURE

Eleven years ago, in Section 413 of the National Heart, Blood Vessel, Lung, and Blood Act (P.L. 92-423), the Congress required the Institute to expand and coordinate its activities in an accelerated attack against heart, blood vessel, lung, and blood diseases. Called the National Heart, Blood Vessel, Lung, and Blood Disease Program, the effort was to include research on the epidemiology, etiology, and prevention of diseases in the NHLBI purview; basic biological research on cardiovascular, pulmonary, and hematologic mechanisms and processes; development and evaluation of devices to assist, replace, or monitor vital organs; field studies and large-scale tests; the collection, preservation, and distribution of blood and blood products; education and training of scientists and clinicians; and public and professional education in all aspects of heart, blood vessel, lung, and blood diseases.

Twenty-eight task groups of approximately 250 medical and scientific advisors assessed the understanding of these problems and identified new opportunities for

initiatives. The National Program, which was published in 1973, established the 20 discrete areas of research shown in the table below and planned goals and objectives for the next 5 years. Each year since that time, in a report of the Director to the President for transmittal to the Congress, the Institute has assessed the progress of the National Program and updated its goals and objectives.

The National Program is expanded and revised as new opportunities are identified, and it represents the framework that guides the Institute's research. The approach used by the NHLBI is an ordered sequence of research activity that includes:

- acquisition of knowledge,
- evaluation of knowledge, and
- application of knowledge.

The program is effected through three administrative units: the Division of Heart and Vascular Diseases,

National Heart, Blood Vessel, Lung, and Blood Program

HEART AND BLOOD VESSEL DISEASES	LUNG DISEASES	BLOOD DISEASES AND RESOURCES
Arteriosclerosis*	Structure and Function of the Lung	Bleeding and Clotting Disorders
Hypertension	Chronic Obstructive Pulmonary Diseases	Disorders of the Red Blood Cell
Cerebrovascular Disease	Pediatric Pulmonary Diseases	Sickle Cell Disease
Coronary Heart Disease	Occupational and Immunologic Lung Diseases	Blood Resources
Peripheral Vascular Diseases	Respiratory Failure	
Arrhythmias	Pulmonary Vascular Diseases	
Heart Failure and Shock		
Congenital and Rheumatic Heart Diseases		
Cardiomyopathies and Infections of the Heart		
Circulatory Assistance		

* Although NHLBI does not have a direct programmatic responsibility for diabetes mellitus, it does support investigations on the metabolic effects and cardiovascular consequences of diabetes.

the Division of Lung Diseases, and the Division of Blood Diseases and Resources. Each Division pursues its own scientific mission, and the Divisions cooperate in areas of shared interest, such as prevention, education, and control. The Divisions use a variety of funding mechanisms, including research grants, program project grants, contracts, centers, and research training programs. Descriptions of the divisional programs follow.

Heart and Vascular Diseases

An estimated 35 million persons, or 16.5 percent of the U.S. population, have one or more of the cardiovascular diseases. Of this population, 8.5 million persons are limited in activity, and 23 million are under 65 years of age. Cardiovascular diseases are the leading cause of death in the United States (an estimated 985,000 deaths in 1981, or 50 percent of all deaths), and the economic cost to the Nation in 1981 was an estimated \$97 billion of which \$38 billion were health expenditures and \$59 billion lost productivity.

The Division of Heart and Vascular Diseases plans and directs an integrated and coordinated research program with emphasis on the causes, diagnosis, treatment, and prevention of heart and vascular diseases. The strategy for implementation of National Program goals provides a balance of activities across the spectrum of biomedical research with a focus on fundamental mechanisms. Multidisciplinary programs are supported to advance basic knowledge of disease and to generate the most effective methods of clinical management and prevention. Clinical trials, which are an important part of the research program, provide an opportunity to test and apply research results. One such trial was the Beta-Blocker Heart Attack Trial, which was designed to determine whether regular administration of propranolol in survivors of myocardial infarction reduces mortality. A program that typifies activities in the area of prevention, education, and control is the National High Blood Pressure Education Program, which was instituted to alert the general public to the wide prevalence of hypertension and to the threat of uncontrolled hypertension to life and health.

Lung Diseases

Lung diseases are among the leading causes of death and disability in the United States. About one in every five persons has some chronic respiratory problem. An estimated 17 million persons have chronic bronchitis,

emphysema, or asthma, and each year, there are about 100 million cases of influenza, pneumonia, or acute bronchitis. As an underlying cause, lung diseases account for nearly 240,000 deaths annually, and lung diseases are a contributing cause to perhaps an equal number of additional deaths.

Activities of the Division of Lung Diseases focus on research on the structure and function of the lung, expansion of the knowledge base on specific lung diseases that constitute health problems, and application of resources to solve immediate and specific problems related to lung diseases.

The Division supports Specialized Centers of Research in pediatric, chronic airway, fibrotic and immunologic, and pulmonary vascular diseases and adult respiratory failure. Special emphasis is placed upon prevention programs. Additionally, the Division seeks to bring the findings of pulmonary research to bear on the practice of medicine in communities through dissemination of, for example, the *Report of the Task Force on Prevention, Control, and Education in Respiratory Diseases* to practicing physicians, other health professionals, institutions, and voluntary agencies.

As required by legislation, the NHLBI applies not less than 15 percent of its funds to programs related to lung diseases.

Blood Diseases and Blood Resources

Blood diseases are chronic disorders that result in more than 350,000 deaths, over 16 million days of hospital care, \$7.5 billion in direct costs, and \$19 billion in lost productivity each year. Blood resources include nearly two dozen products transfused to patients, derived from more than 11 million units of whole blood collected from 6 million American donors annually. In 1980, an estimated 10 million units of whole blood and red cells were transfused to about 3.3 million patients.

Programs of the Division of Blood Diseases and Resources are designed to reduce the toll of morbidity and mortality caused by blood diseases and to ensure the provision of an adequate supply of safe blood at reasonable cost. The Division's programs are organized into four principal areas of research: thrombosis and hemostasis, red blood cell disorders, sickle cell disease, and blood resources. Activities range through the whole spectrum of biomedical research, from

basic scientific investigation to clinical trials and preventive medicine. Special attention is given to training programs that help ensure a constant supply of highly skilled investigators in blood-related research.

Legislation requires that not less than 15 percent of the Institute's funds be used for research on blood diseases and blood resources.

Interagency Technical Committee

The National Heart, Blood Vessel, Lung, and Blood Act of 1972 also required the Secretary of the Department of Health, Education, and Welfare to establish an Interagency Technical Committee (IATC) under the chairmanship of the Director of the NHLI "to coordinate those aspects of all Federal programs related to heart, blood vessel, lung, and blood diseases and blood resources" (Section 416). Seventeen Federal agencies whose activities are related to the National Program participate on this committee, including the NHLBI.

The IATC has organized four working groups:

- Cardiovascular Biomedical Engineering Working Group,
- Blood Resources and Blood Substitutes Working Group,
- Smoking and Heart, Lung, and Blood Diseases Working Group, and
- Lipid and Lipoprotein Comparability Working Group.

These working groups draw their membership primarily from the program management level of the participating agencies. Members of the working groups meet three or four times a year to discuss specific aspects of program areas. Highlights of particular agency programs and projects are discussed, mutual problems are identified, technical advice is provided, and opportunities for coordination or implementation of new collaborative initiatives are developed.

The full IATC meets at least twice a year. These meetings give the member agencies the opportunity to exchange information on the status of their programs. Such discussions facilitate the coordination of research activities and help to eliminate duplication and overlapping of effort. The IATC published reports on Federal support and interagency cooperation in research related to heart, blood vessel, lung, and blood diseases for fiscal years 1972, 1973, 1974, 1977, and 1979.

International Activities

Since its beginning, the NHLBI has participated in international information exchanges. In 1972, additional opportunities for U.S. scientists to collaborate with scientists of other countries in studies of joint interest were created by the National Heart, Blood Vessel, Lung, and Blood Act. Because of the rising impact over the past decade of heart, blood vessel, lung, and blood diseases on the economy of many nations and on the well-being of populations, efforts have recently been made to increase further the sharing of research information and the number of joint research projects.

In recognition of its commitment to international cooperation, the NHLBI in 1980 was designated a World Health Organization Collaborating Center for Research and Training in Cardiovascular Diseases for the Americas. Through international studies and information exchanges, U.S. and foreign scientists join in investigating the influences of lifestyles and other risk factors on disease. Such investigations have resulted in comparative studies of epidemiological data from the United States, Canada, Israel, the U.S.S.R, Yugoslavia, Great Britain, Poland, and Norway. In new cooperative studies with China (Mainland), standardized approaches are being developed that will further facilitate international comparisons of disease patterns. Other programs focus on health promotion and disease prevention.

International activities include an agreement with the Federal Republic of Germany that has contributed to the design and planning of a multicenter German Cardiovascular Disease Prevention Study and a National Health Survey, which are similar to efforts in the United States. A U.S.-trained epidemiologist recently completed a pilot study in Munich as part of the German High Blood Pressure Education Program, which is modeled after the U.S. National High Blood Pressure Education Program begun in the early 1970's.

Scientists from the NHLBI and the French Institut National de la Sante et de la Recherche Medicale have cooperated in pulmonary research on basic mechanisms of the lung for diagnostic purposes as well as for ultrastructural and immunologic investigations.

Cooperation continued with Japan in studies of the role of nutrition in hypertension. Exchanges of scientists for joint research and joint scientific meetings on

the prevention of cardiovascular disease also continued under a U.S.-Italian agreement. In September 1983, U.S. experts from several disciplines who are studying the acquired immunodeficiency syndrome (AIDS) met with scientists from Australia, Canada, France, the Federal Republic of Germany, Haiti, and the United Kingdom to share information on incidence, definition, and treatment of the syndrome. Scientists concluded that the disease appeared in the United States about 1.5 to 2 years before it appeared in Germany, and U.S. and German scientists agreed to exchange information and to cooperate in research.

International activities of the Institute with various countries in FY 1983 are shown on page 111.

3. IMPORTANT EVENTS

June 16, 1948. President Harry S. Truman signs the National Heart Act, creating the National Heart Institute in the Public Health Service (PHS), with the National Advisory Heart Council as its advisory body.

July 7, 1948. Dr. Paul Dudley White is selected to be "Executive Director of the National Advisory Heart Council and Chief Medical Advisor to the National Heart Institute" under Section 4b of the National Heart Act.

August 1, 1948. The National Heart Institute (NHI) is established as one of the National Institutes of Health (NIH) by Surgeon General Leonard A. Scheele. As legislated in the National Heart Act, the NHI assumes responsibility for heart research, training, and administration. Intramural research projects in cardiovascular diseases and gerontology conducted elsewhere in the NIH are transferred to the NHI. The Director of the NHI assumes all leadership for the total PHS heart program. Dr. Cassius J. Van Slyke is appointed as the first Director of the NHI.

August 29, 1948. Surgeon General Scheele announces the membership of the first National Advisory Heart Council. Varying terms of membership for the 16-member Council commence September 1.

September 8, 1948. The National Advisory Heart Council holds its first meeting.

January 1949. Cooperative Research Units are established at four institutions: the University of California, the University of Minnesota, Tulane University, and Massachusetts General Hospital. Pending completion of the NHI's own research organization and facilities, the Units are jointly financed by the NIH and the institutions.

July 1, 1949. The NHI Intramural Research Program is established and organized on three general research levels consisting of three laboratory sections, five laboratory-clinical sections, and four clinical sections. The Heart Disease Epidemiology Study at Framingham, Massachusetts, is transferred from the Bureau of State Services to the PHS to the NHI.

January 18-20, 1950. The NHI and the American Heart Association jointly sponsor the first National Conference on Cardiovascular Diseases in Washington, D.C., to summarize current knowledge and to make recommendations concerning further progress against heart and blood vessel diseases.

December 1, 1952. Dr. James Watt is appointed the Director of the NHI, succeeding Dr. Van Slyke, who is appointed as Associate Director of the NIH.

July 6, 1953. The Clinical Center admits its first patient for heart disease research.

July 1, 1957. The first members of the NHI Board of Scientific Counselors begin their terms. The Board was established in 1956 "to provide advice on matters of general policy, particularly from a long-range viewpoint, as they relate to the intramural research program."

February 19, 1959. The American Heart Association and the NHI present a report to the Nation—"A Decade of Progress Against Cardiovascular Disease."

April 21, 1961. The President's Conference on Heart Disease and Cancer, whose participants on March 15 were requested by President John F. Kennedy to assist "in charting the Government's further role in a national attack on these diseases," convenes at the White House and submits its report.

September 11, 1961. Dr. Ralph E. Knutti is appointed Director of the NHI, succeeding Dr. Watt, who becomes head of international activities for the PHS.

December 30, 1963. February is designated as "American Heart Month" by a unanimous joint resolution of the Congress, and is approved by President Lyndon B. Johnson.

November 22-24, 1964. The Second National Conference on Cardiovascular Diseases is held in Washington, D.C., cosponsored by the American Heart Association, the NHI, and the Heart Disease Control Program of the PHS, to evaluate progress since the 1950 Conference and to assess needs and goals for continued and accelerated growth against heart and blood vessel diseases.

December 9, 1964. The President's Commission on Heart Disease, Cancer, and Stroke, appointed by President Lyndon B. Johnson on March 7, 1964, submits its report to "recommend steps that can be taken to reduce the burden and incidence of these diseases."

August 1, 1965. Dr. William H. Stewart assumes the Directorship of the NHI upon Dr. Knutti's retirement.

September 24, 1965. Dr. William H. Stewart, NHI Director, is named Surgeon General of the PHS.

October 6, 1965. A fiscal year 1966 Supplemental Appropriations Act (P.L. 89-199) allocates funds to implement the recommendations of the President's Commission on Heart Disease, Cancer, and Stroke that fall within existing legislative authorities. The NHI is given \$5.05 million for new clinical training programs, additional graduate training grants, cardiovascular clinical research centers on cerebrovascular disease and thrombotic and hemorrhagic disorders, and planning grants for future specialized cardiovascular centers.

March 8, 1966. Dr. Robert P. Grant succeeds Dr. Stewart as Director of the NHI. Dr. Grant serves until his death, on August 15, 1966.

November 6, 1966. Dr. Donald S. Fredrickson is appointed Director of the NHI.

March 15, 1968. Dr. Theodore Cooper succeeds Dr. Fredrickson as Director of the NHI, the latter electing to return to research activities with the Institute.

October 16, 1968. Dr. Marshall W. Nirenberg is awarded a Nobel Prize in Physiology for discovering the key to deciphering the genetic code. Dr. Nirenberg, chief of the NHI Laboratory of Biochemical Genetics, is the first Nobel Laureate at the NIH and first Federal employee to receive a Nobel Prize.

October 26, 1968. The NHI receives the National Hemophilia Foundation's Research and Scientific Achievement Award for its "medical leadership . . . tremendous stimulation and support of research activities directly related to the study and treatment of hemophilia."

November 14, 1968. The 20th anniversary of the NHI is commemorated at the White House under the auspices of President Johnson and other distinguished guests.

August 12, 1969. A major NHI reorganization plan creates five program branches along disease category lines in extramural programs (arteriosclerotic disease, cardiac disease, pulmonary disease, hypertension and kidney diseases, and thrombosis and hemorrhagic diseases), a Therapeutic Evaluations Branch and Epidemiology Branch under the associate director for clinical applications, and three offices in the Office of the Director (heart information, program planning, and administrative management).

November 10, 1969. The NHI is redesignated by the Secretary, Health, Education, and Welfare (HEW), as the National Heart and Lung Institute (NHLI), reflecting a broadening scope of its functions.

July 9, 1970. Dr. Theodore Cooper, Director of the NHLI, convenes a task force to develop a long-range plan to combat arteriosclerosis. The goal is a program aimed at prevention and control of the disorder and effective treatment of its complications.

February 18, 1971. President Richard M. Nixon's Health Message to Congress identifies sickle cell anemia as a high priority disease and calls for increased Federal expenditures. The assistant secretary for health and scientific affairs, HEW, is assigned lead-agency responsibility for coordination of National Sickle Cell Disease Program at the NIH and NHLI.

June 1971. The *Report of the Task Force on Arteriosclerosis* summarizes the results of a year of deliberations. Volume I of the report addresses general aspects of the problem and presents the major conclusions and recommendations in nontechnical language; Volume II contains technical information on the current state of knowledge and conclusions and recommendations in each of the following areas: atherogenesis, presymptomatic atherosclerosis, overt atherosclerosis, and rehabilitation.

May 16, 1972. The National Sickle Cell Anemia Control Act (P.L. 92-294) provides for a national diagnosis, control, treatment, and research program. The act does not mention the NHLI, but has special pertinence because the Institute has been designated to coordinate the National Sickle Cell Disease Program.

June 12, 1972. Elliot Richardson, Secretary, HEW, approves a nationwide program for high blood pressure information and education, and appoints two committees to implement the program: the Hypertension Information and Education Advisory Committee, chaired by the Director, NIH; and the Interagency Working Group, chaired by the Director, NHLI. A High Blood Pressure Information Center is established within the NHLI Office of Information to collect and disseminate public and professional information about the disease.

July 14, 1972. Secretary Richardson approves a reorganization of the NHLI, elevating the Institute to Bureau status within the NIH and comprising seven division-level components: Office of the Director, Division of Heart and Vascular Diseases, Division of Lung Diseases, Division of Blood Diseases and Resources, Division of Intramural Research, Division of Technological Applications, and Division of Extramural Affairs.

September 19, 1972. The National Heart, Blood Vessel, Lung, and Blood Act of 1972 (P.L. 92-423) expands the authority of the Institute to advance the national attack upon these diseases. The act calls for intensified and coordinated Institute activities to be planned by the Director and reviewed by the NHLI Advisory Council.

July 24, 1973. The first Five-Year Plan for the National Heart, Blood Vessel, Lung, and Blood Program is transmitted to the President and to Congress.

December 17, 1973. The National Heart and Lung Advisory Council completes its first Annual Report on the National Program.

February 13, 1974. The Director of the NHLI forwards his First Annual Report on the National Program to the President for transmittal to Congress.

April 5, 1974. The Assistant Secretary for Health, HEW, authorizes release of the Report to the President by the President's Advisory Panel on Heart Disease. The report of the 20-member panel, chaired by Dr. John S. Millis, includes a survey of the problem of heart and blood vessel disorders and panel recommendations to reduce illness and death from these disorders.

August 2, 1974. The Secretary, HEW, approves regulations governing the establishment, support, and operation of National Research and Demonstration Centers for heart, blood vessel, lung, and blood diseases, which implement Section 415(b) of the PHS Act, as amended by the National Heart, Blood Vessel, Lung, and Blood Act of 1972: 1) to carry out basic and clinical research on heart, blood vessel, lung, and blood diseases; 2) to provide demonstrations of advanced methods of prevention, diagnosis, and treatment; and 3) to supply a training source for scientists and physicians concerned with the diseases.

September 16, 1975. Dr. Robert I. Levy is appointed Director of the NHLI, succeeding Dr. Theodore Cooper, who was appointed deputy assistant secretary for health, HEW, on April 19, 1974.

June 25, 1976. Legislation amending the Public Health Service Act (P.L. 94-278) changes the name of the National Heart and Lung Institute to the National Heart, Lung, and Blood Institute (NHLBI) and provides for an expansion in blood-related activities within the Institute and throughout the National Heart, Blood Vessel, Lung, and Blood Program.

August 1, 1977. The Biomedical Research Extension Act of 1977 (P.L. 95-83) reauthorizes the programs of the National Heart, Lung, and Blood Institute, with continued emphasis on both the National Program and related prevention and dissemination activities.

February 1978. The National Heart, Lung, and Blood Institute and the American Heart Association jointly celebrate their 30th anniversary.

September 1979. The Task Force on Hypertension, established in September 1975 to assess the current state of hypertension research, completes its in-depth survey and recommendations for improved prevention, treatment, and control in 14 major areas. These recommendations are intended to guide the NHLBI in its future efforts.

November 1979. The results of the Hypertension Detection and Follow-up Program, a major clinical trial started in 1971, provide evidence that tens of thousands of lives are being saved through treatment of mild hypertension and that perhaps thousands more could be saved annually if all people with mild hypertension were under treatment.

November 21, 1980. The Albert Lasker Special Public Health Award is presented to the National Heart, Lung, and Blood Institute for its Hypertension Detection and Follow-up Program, "which stands alone among clinical studies in its profound potential benefit to millions of people."

December 17, 1980. The Health Programs Extension Act of 1980 (P.L. 96-538) reauthorizes the National Heart, Lung, and Blood Institute with continued emphasis on both the National Program and related prevention programs.

September 8, 1981. The Working Group on Arteriosclerosis, convened in 1978 to assess present understanding, highlight unresolved problems, and emphasize opportunities for future research in arteriosclerosis, completes its report. Volume I of the report presents conclusions and recommendations in nontechnical language. Volume II provides in-depth substantial basis for the conclusions and recommendations contained in volume I.

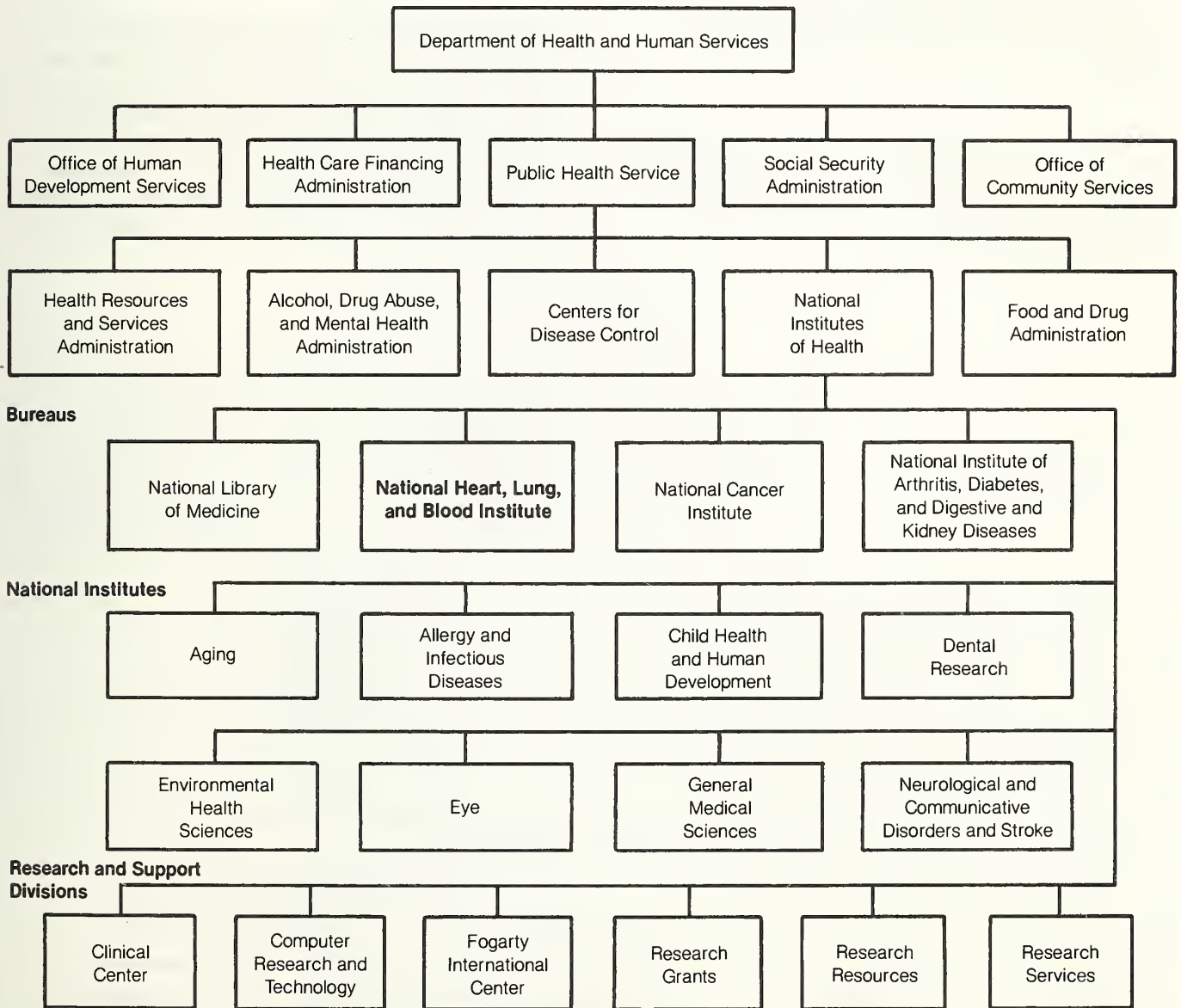
October 2, 1981. The Beta-Blocker Heart Attack Trial (BHAT) demonstrates benefits to those in the trial who received the drug propranolol, compared to the control group.

July 6, 1982. Dr. Claude Lenfant is appointed Director of the NHLBI. He succeeds Dr. Robert I. Levy, who was appointed dean of the School of Medicine and vice president for health sciences at Tufts University.

October 26, 1983. The Coronary Artery Surgery Study (CASS) results are released demonstrating that mildly symptomatic patients with coronary artery disease can safely defer coronary artery bypass surgery until symptoms worsen. The results of this clinical trial will help patients and their physicians decide whether and when bypass surgery should be undertaken. The trial results place this decision on firmer scientific footing.

4. ORGANIZATIONAL STRUCTURE

Location of the NHLBI in the Department of Health and Human Services



The National Heart, Lung, and Blood Institute

The National Heart, Lung, and Blood Institute provides leadership for a national program in diseases of the heart, blood vessels, lungs, and blood; in the use of blood; and in the management of blood resources.

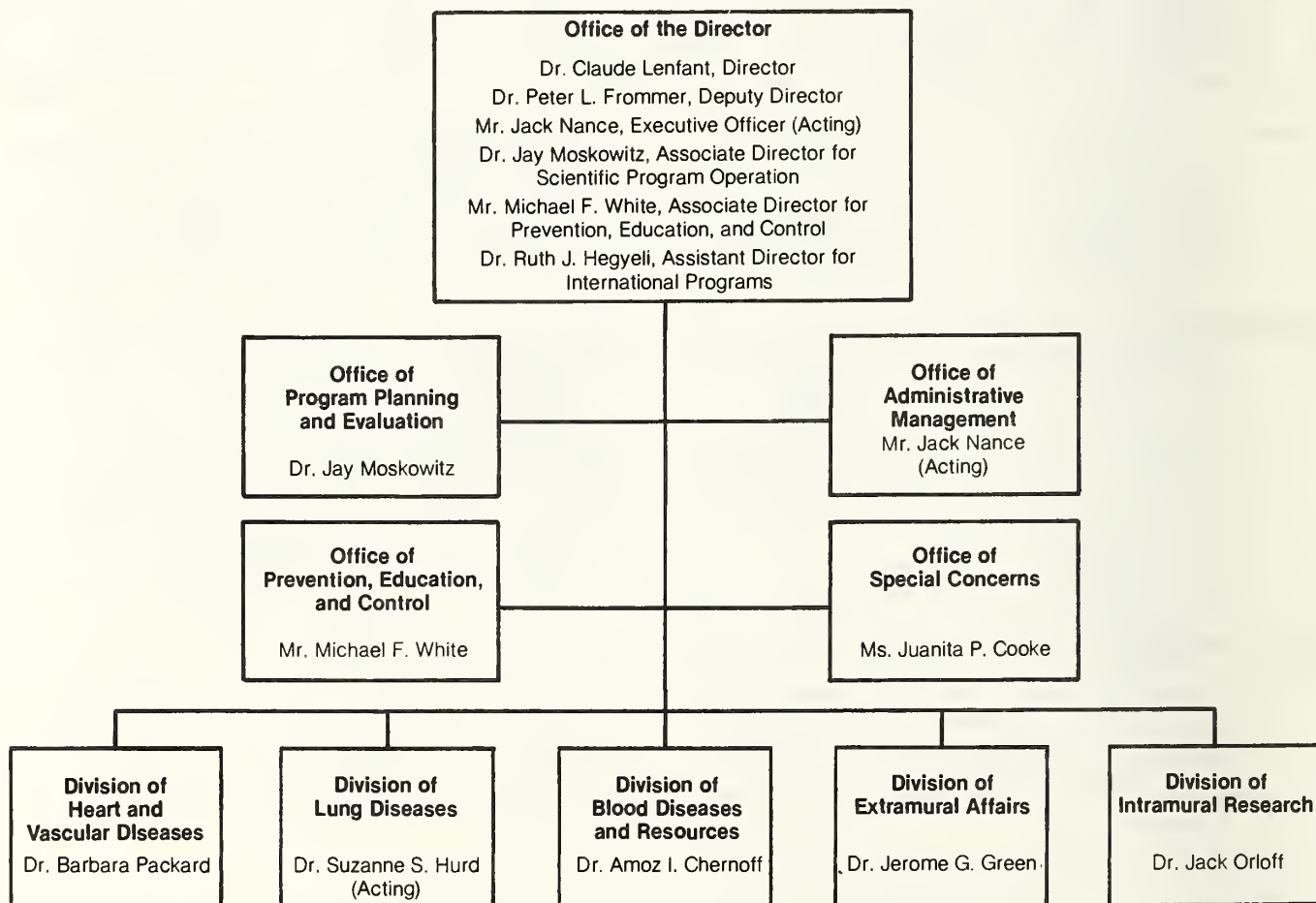
The Institute plans, conducts, fosters, and supports an integrated and coordinated program of research, investigations, clinical trials, and demonstrations relating to the causes, prevention, and methods of diagnosis and treatment (including emergency medical treatment) of heart, blood vessel, lung, and blood diseases through research performed in its own laboratories and through contracts and research grants to scientific institutions and to individual scientists.

The Institute is responsible for planning and directing research on the development, trial, and evaluation of drugs and devices relating to the prevention and treatment of these diseases and the rehabilitation of patients suffering from them.

Studies and research are supported in the clinical use of blood and all aspects of the management of blood resources. Training in fundamental sciences and clinical disciplines in basic and clinical research programs relating to heart, blood vessel, blood, and lung diseases are supported also.

The Institute works with the other NIH Institutes and all Federal agency programs relating to the above diseases, including programs in hypertension, stroke, respiratory distress, and sickle cell anemia.

The Institute also conducts educational activities, including the collection and dissemination of educational materials that emphasize the prevention of these diseases for health professionals and the lay public. The Institute also maintains continuing relationships with institutions and professional associations; international, national, state, and local officials; and voluntary agencies and organizations working in these areas.

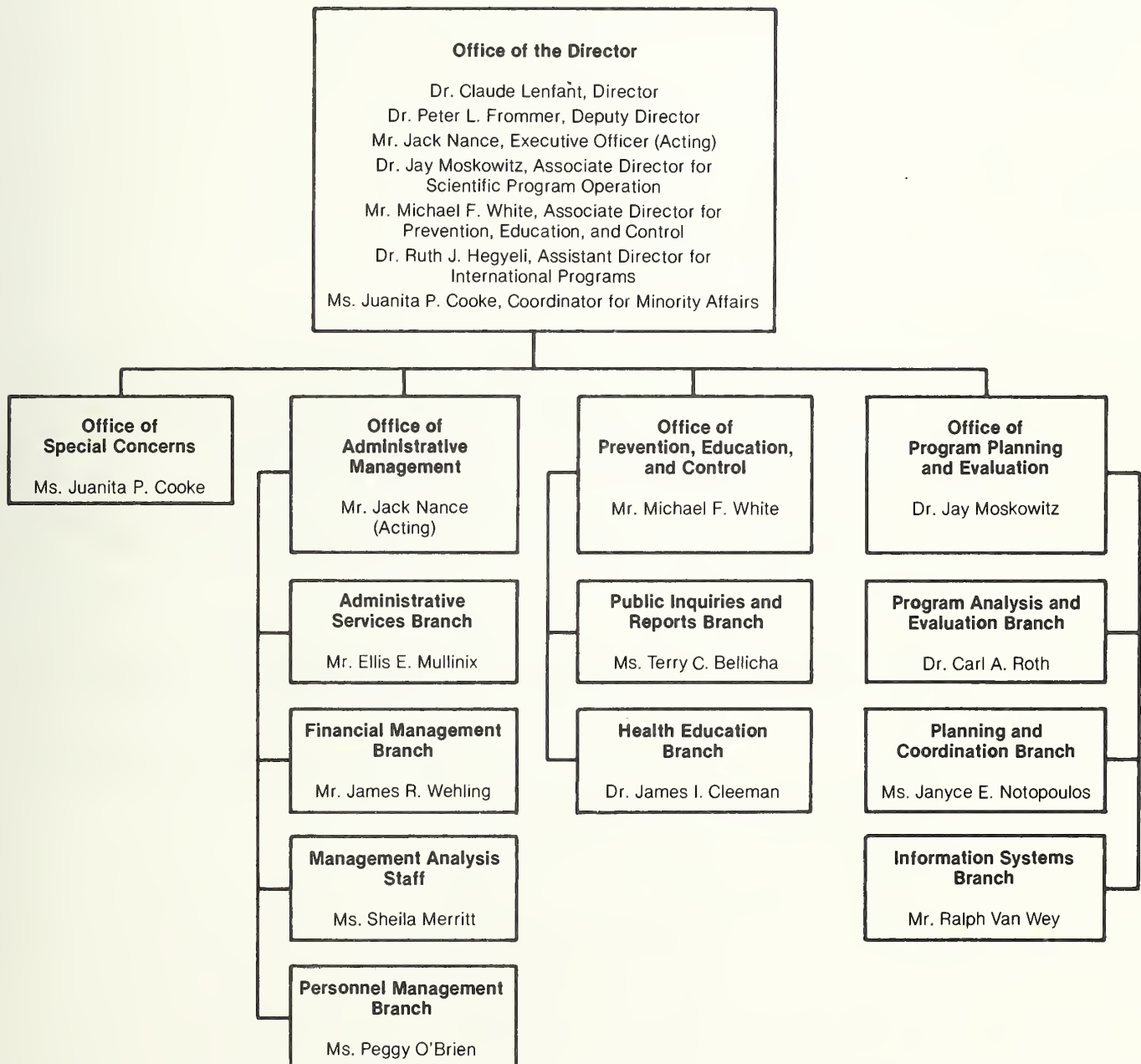


Office of the Director

The Office of the Director develops and provides leadership for the National Heart, Blood Vessel, Lung, and Blood Diseases and Blood Resources Program, including the coordination of all Federal health programs relating to the above diseases as authorized. It provides overall planning, direction, coordination, and evaluation of the Institute's programs.

The Office of the Director collects, develops, and disseminates information on the above diseases,

and on transfusion medicine with emphasis upon factors in their prevention, and conducts and fosters educational programs for scientists and clinicians. It provides leadership in the transfer and assessment of information for the scientific community and the lay public and establishes internal Institute policy for program and administrative operations, maintaining surveillance over their execution.



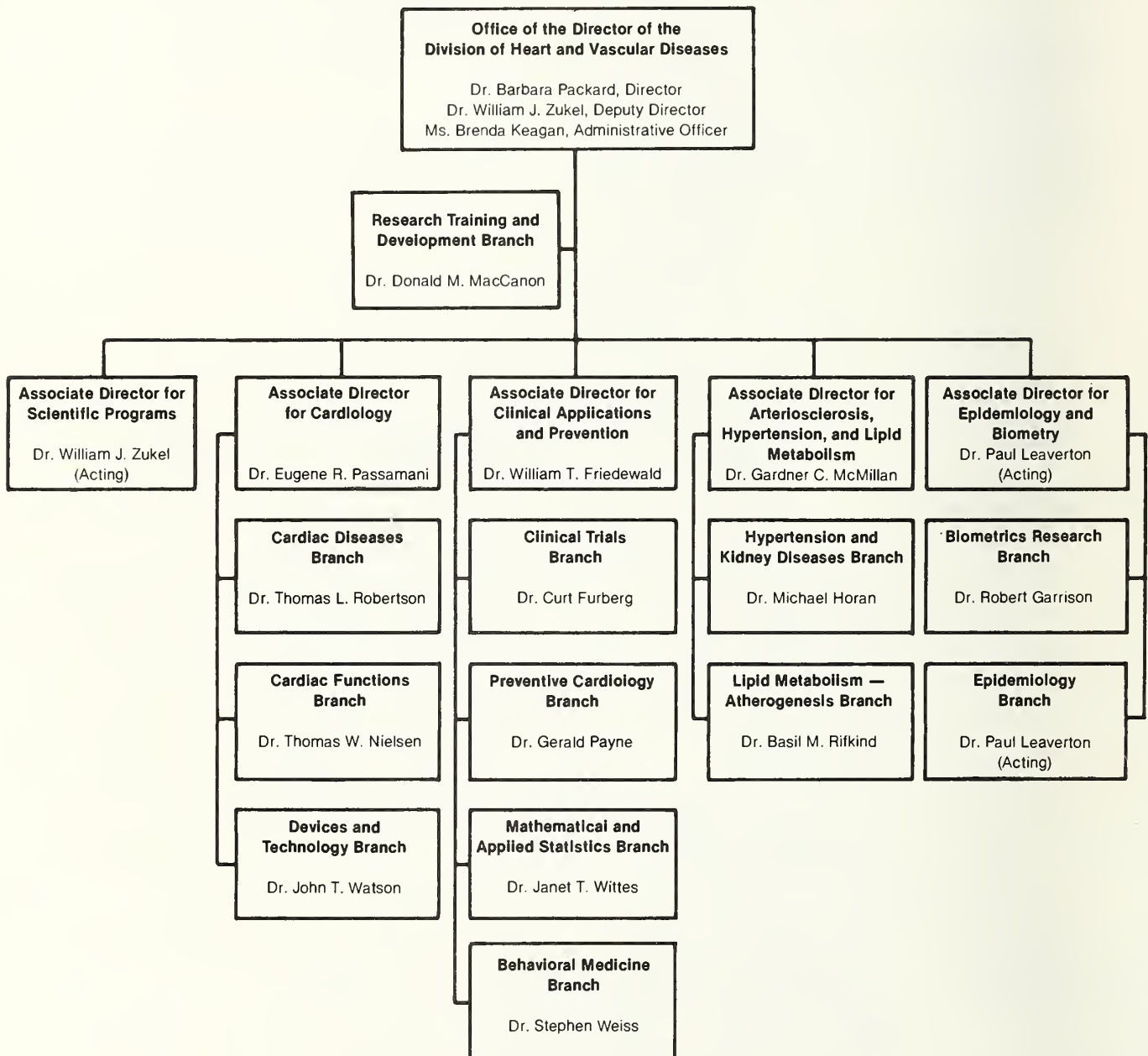
Division of Heart and Vascular Diseases

The Division of Heart and Vascular Diseases (DHVD) plans and directs the Institute's research grant, contract, and training programs in heart and vascular diseases, encompassing basic research, targeted research, clinical trials and demonstrations, national cardiovascular centers, technological development, and application of research findings.

The DHVD maintains surveillance over developments in its program area, and assesses the national

need for research on the causes, prevention, diagnosis, and treatment of cardiovascular diseases; technological development; application of research findings; and research training and development in these areas.

The Division maintains the necessary scientific management capability to foster and guide an effective attack upon cardiovascular diseases.



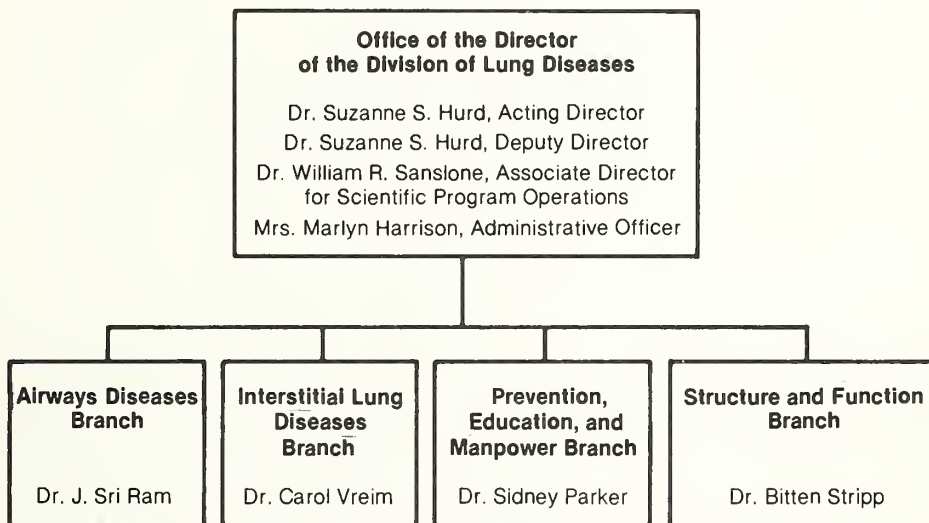
Division of Lung Diseases

The Division of Lung Diseases (DLD) plans and directs the Institute's research grant, contract, and training programs in lung diseases, encompassing basic research, targeted research, clinical trials and demonstrations, national pulmonary centers, technological development, and application of research findings.

The DLD maintains surveillance over developments in its program area, and assesses the national need

for research on the causes, prevention, diagnosis, and treatment of lung diseases; technology development; application of research findings; and research training and development in these areas.

The Division maintains the necessary scientific management capability to foster and guide an effective attack upon lung disease.



Division of Blood Diseases and Resources

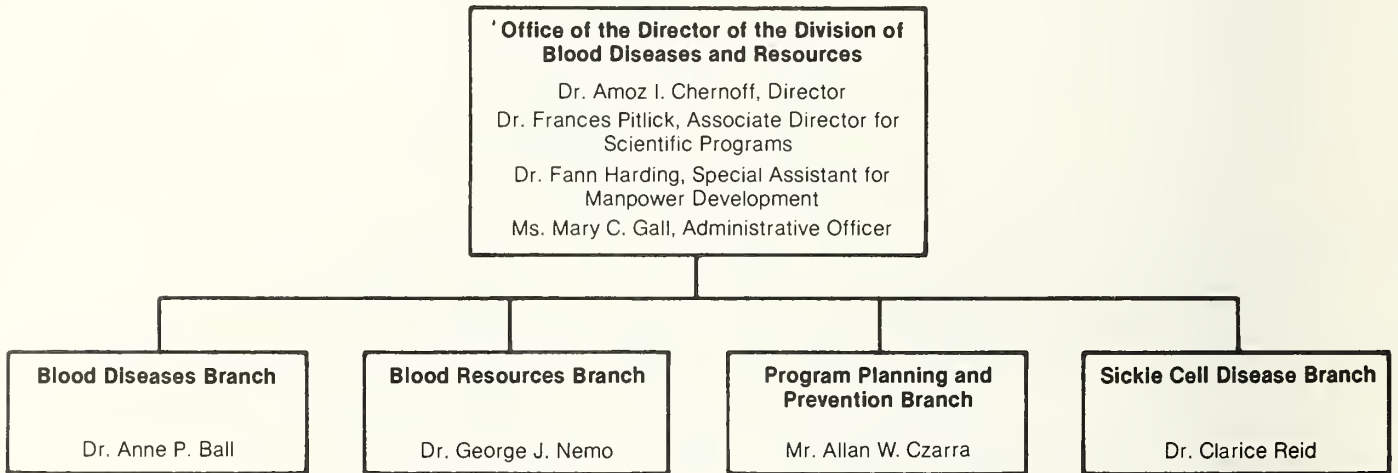
The Division of Blood Diseases and Resources (DBDR) plans and directs the Institute's research grant, contract, and training programs in blood diseases and resources, encompassing basic research, targeted research, clinical trials and demonstrations, technological development, and application of research findings.

The DBDR maintains surveillance over developments in its program area, and assesses the national need for research on the causes, prevention, diagnosis, and treatment of blood diseases and transfusion medicine; technological development; application of research findings; and research training and development.

The Division conducts research and demonstrations to improve the national systems of blood procurement, management, and distribution.

The DBDR participates in Federal sickle cell disease activities, and operates a national clearinghouse for information on sickle cell disease.

The Division maintains the necessary scientific management capability to foster and guide an effective attack on blood diseases and to manage blood resources.



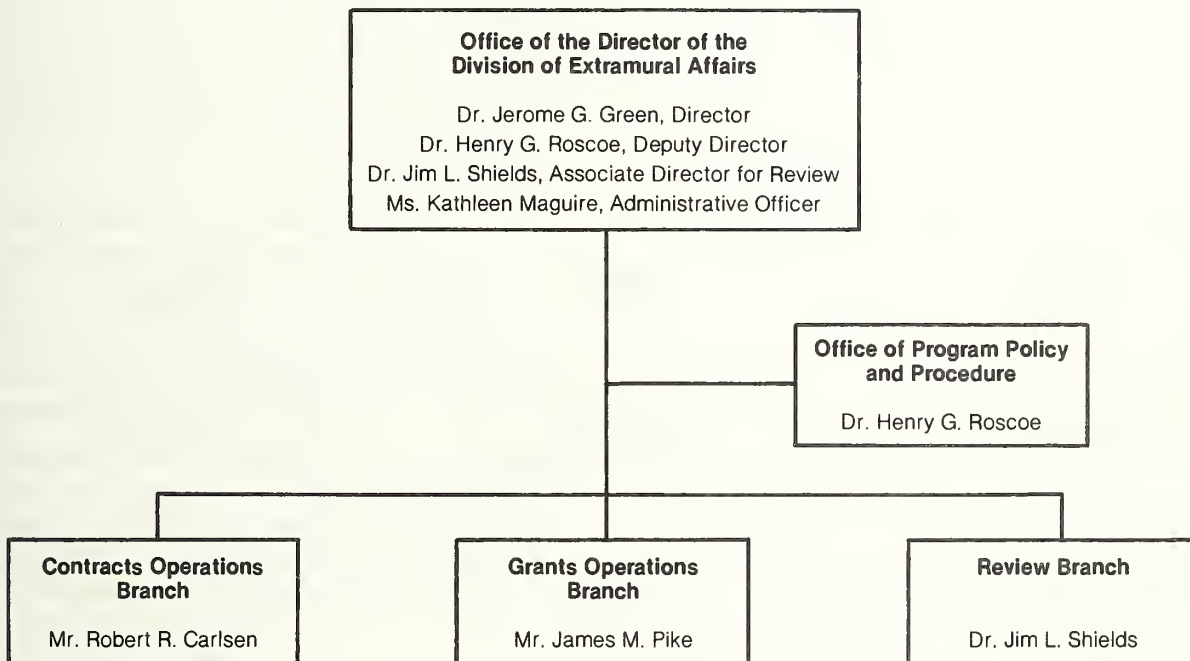
Division of Extramural Affairs

The Division of Extramural Affairs (DEA) advises the Director, NHLBI, on research contract, grant, and research training program policies.

The Division represents the Institute on overall NIH committees on extramural program policy, oversees compliance with such policy within the NHLBI, and coordinates the Institute's research grant and research training and development programs with the National Heart, Lung, and Blood Advisory Council.

The DEA provides grant and contract management and processing services to the Institute's program divisions.

The Division supplies initial scientific merit review of applications and proposals for project grants, research training and development grants, and research contracts for the Institute.

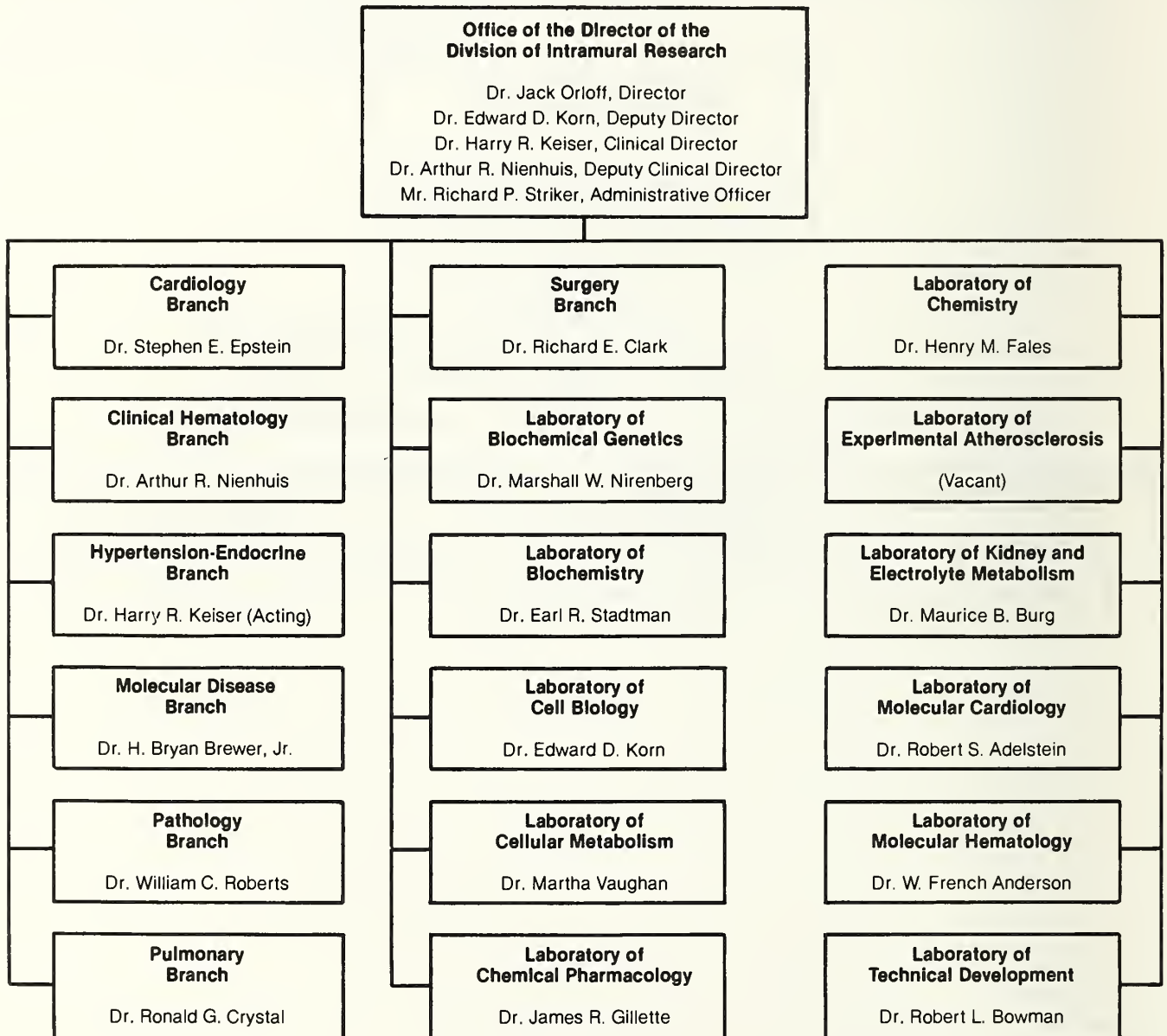


Division of Intramural Research

The Division of Intramural Research (DIR) plans, conducts, and directs a program of basic laboratory and clinical research in heart, blood vessel, and lung diseases, certain blood diseases such as sickle cell anemia and hemophilia, and development of technology related to cardiovascular, pulmonary, and hematologic disorders.

The Division maintains communication with other programs of the Institute to facilitate early practical

application of basic research findings. Areas of major interest include the biology of experimental and clinical arteriosclerosis and its manifestations; the pathophysiology of hypertensive vascular disease; functions of the lung; clinical and experimental studies on physiological and pharmacological aspects of heart, blood, and lung diseases; and a broad program of other basic research and technical developments.



5. DISEASE STATISTICS

Introduction

At least 15 percent of all persons in the United States have a major cardiovascular disease. This group of diseases still accounts for half of all deaths and for 39 percent of all deaths in the 35-64 age group. The impact on the nation's economy of medical expenditures and lost productivity due to these diseases was \$97 billion in 1981 alone. The most prevalent, serious, chronic lung disease is chronic obstructive pulmonary disease, which affects 10 million persons and caused 57,000 deaths in 1982, making it the fifth leading cause of death. Illness and premature deaths due to lung diseases (excluding lung cancer) cost the economy \$25 billion in 1981. Bleeding disorders and diseases of the red blood cells, while not widely prevalent, often have devastating consequences for those affected. For example, frequent hospitalizations and, especially for patients with Cooley's anemia, early deaths result in high medical costs and human suffering. The blood clotting disorders, primarily thrombosis, comprise a large part of the cardiovascular diseases, with significant morbidity and mortality.

In recent decades, mortality from the cardiovascular, lung, and blood diseases improved, dramatically in some cases. In 1980, 57 percent of all deaths were attributed to these diseases, down from 62 percent in 1968. Other improving trends are highlighted below.

Cardiovascular Diseases

- Death rates in 1982 for the following causes of death are a fraction of what they were in the 1960's:
 - Stroke 1/2 of 1966 rate
 - Hypertensive disease 1/4 of 1960 rate*
 - Rheumatic heart disease 1/4 of 1962 rate
 - Coronary heart disease (CHD) . . . 2/3 of 1968 rate*
 - Cardiovascular disease (CVD) . . . 2/3 of 1966 rate
 - Noncardiovascular causes 7/8 of 1961 rate
- In spite of growth and aging of the U.S. population, the number of cardiovascular deaths dropped below 1 million in 1975 and has not exceeded this number since.

* Data are corrected for the discontinuity of trend caused by the shift to the Ninth Revision of International Classification of Diseases.

Note: The cardiovascular diseases, also called diseases of the circulatory system, include heart diseases (coronary heart disease is the largest subgroup), cerebrovascular diseases (stroke), hypertensive diseases, diseases of the arteries, diseases of the veins, and congenital anomalies of the circulatory system.

- CVD caused 49.6 percent of all deaths in 1982. However, that is the lowest percentage in 35 years, down from a peak of 55.1 percent in 1962.
- Although CHD has become the number one cause of death by far, the rate of coronary deaths in 1982 declined 37 percent from the peak in 1963. Most of that decline (69%) occurred since 1972.
- If the coronary death rate had remained level since its peak in 1963, it would have caused almost 300,000 more deaths in 1982 in addition to the 555,000 that occurred.
- Just over 112,000 coronary deaths in 1982 occurred before age 65. That is the lowest number since 1949. The 112,000 deaths represented 21 percent of all coronary deaths compared with 38 percent in 1949.
- Although CHD still causes 1/5 of all deaths from ages 35-64, it is a reduction from 1/3 in 1963.
- Heart disease was the number one cause of death in age group 35-44 until 1976, when it became number two after accidents. In 1981, heart disease also dropped to number two after cancer for the age group 45-54. In the next year or two, heart disease may also drop to number two behind cancer for the age group 55-64.

Lung Diseases

- The chronic obstructive pulmonary diseases (COPD) death rate doubled between 1950 and 1960 and again between 1960 and 1970, which means a 100 percent increase each time. However, from 1970 to 1980, the COPD death rate increased only 27 percent.

-
- Although the combined COPD death rate for all persons continues to increase, especially for women, the death rate for men under age 65 turned downward in 1974. The death rate for men ages 65-74, which showed an upward trend until 1976, has remained flat since then.
 - In 1968, the average age at death for a person with cystic fibrosis was 9 years. In 1978, the average life expectancy for such persons had increased to 15 years.
 - From 1968 to 1978, the infant mortality rate for Respiratory Distress Syndrome (RDS), asphyxia of the newborn, and immaturity has been cut in half from 798 to 379 deaths per 100,000 live births. Infant mortality from influenza and pneumonia during the same time period has been reduced 80 percent from 226 to 46 deaths per 100,000 live births.

Blood Diseases

- In the following blood disease categories, the average age at death increased between 1968 and 1978 for
 Infectious hepatitis from 47 to 51 years,
 Sickle cell anemia from 24 to 30 years, and
 Hemophilia from 35 to 53 years.
- Clotting disorders, i.e., circulatory conditions caused by arterial and venous embolism and thrombosis, declined 36 percent between 1968 and 1978.*

* Measured by the decline in the age-adjusted death rate for acute myocardial infarction and cerebrovascular diseases from 219 to 135 deaths per 100,000 population.

Source: Prepared by NHLBI; data from the National Center for Health Statistics (NCHS) and the World Health Organization.

Deaths by Cause and Percentage of Total Deaths, 1968, 1982

Cause	Number of Deaths			
	1968*	Percent of Total Deaths	1982†	Percent of Total Deaths
Cardiovascular Diseases				
Coronary Heart Disease	674,747	35.0	554,900	27.9
Stroke	211,390	11.0	159,630	8.0
Other	162,176	8.4	270,511	13.6
Cardiovascular Subtotal	1,048,313	54.3	985,041	49.6
Cancer	318,547	16.5	435,550	21.9
Accidents	114,864	6.0	95,680	4.8
Pneumonia and Influenza	73,492	3.8	50,460	2.5
Chronic Obstructive Pulmonary Disease‡	30,390	1.6	56,920	2.9
Other Causes	344,476	17.8	362,349	18.2
Total All Causes	1,930,082	100.0	1,986,000	100.0

* Based on the Eighth Revision of the International Classification of Diseases.

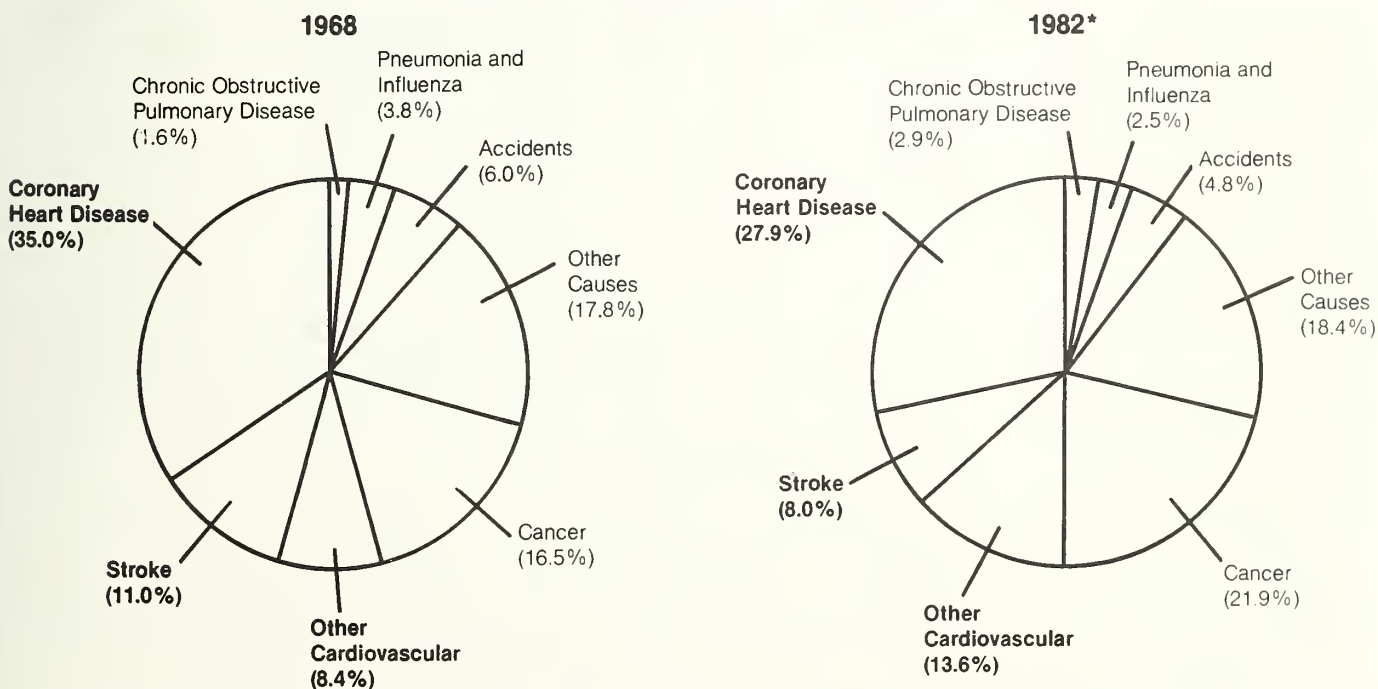
† Provisional and based on the Ninth Revision of the International Classification of Diseases, which assigns almost 100,000 fewer deaths to coronary heart disease and results in other less serious discontinuities of trends.

‡ Coded in 1968 as Bronchitis and Emphysema.

Note: Percentages may not add to 100% due to rounding.

Source: NCHS and estimates by National Heart, Lung, and Blood Institute (NHLBI).

Percent Distribution of Causes of Death, U.S., 1968 and 1982

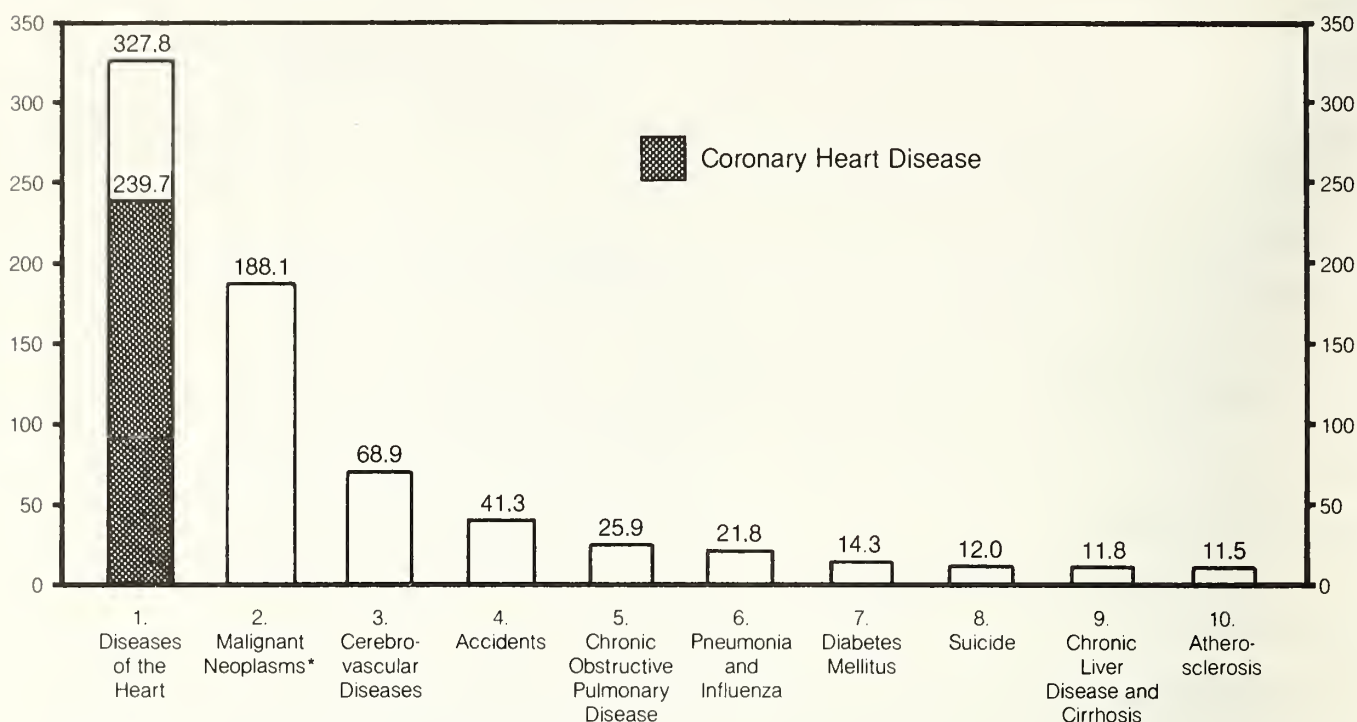


* Provisional and based on the Ninth Revision of the International Classification of Diseases, which assigns almost 100,000 fewer deaths to coronary heart disease and results in other less serious discontinuities of trends.

Note: Percentages may not add to 100% due to rounding.

Source: NCHS.

Ten Leading Causes of Death:* Death Rates, U.S., 1982 (Rates per 100,000 Population)



* Including neoplasms of lymphatic and hematopoietic tissues.

Source: NCHS Monthly Vital and Health Statistics, Vol. 30, No. 13, December 20, 1982 (provisional rates).

Ten Leading Causes of Death, U.S., 1900, 1950, 1960, 1970, 1980 (Unadjusted Rate per 100,000 Population and Rank)

Causes of Death	1900		1950		1960		1970		1980	
	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank
Diseases of the Heart	137.4	4	355.5	1	369.0	1	362.0	1	336.9	1
Malignant Neoplasms	64.0	8	139.8	2	149.2	2	162.8	2	183.9	2
Cerebrovascular Diseases	106.9	5	104.0	3	108.0	3	101.9	3	75.1	3
Accidents	72.3	7	60.6	4	52.3	4	56.4	4	46.7	4
Influenza and Pneumonia	202.2	1	31.3	6	37.3	6	30.9	5	24.1	5
Chronic Obstructive Pulmonary Disease*	—	—	—	—	—	—	17.4	8	23.2	6
Diabetes Mellitus	—	—	16.2	9	16.7	8	18.9	7	15.4	7
Cirrhosis of the Liver	—	—	—	—	11.3	10	15.5	10	13.5	8
Arteriosclerosis	—	—	20.4	7	20.0	7	15.6	9	13.0	9
Suicide	—	—	—	—	—	—	—	—	11.9	10
Certain Causes of Mortality in Early Infancy	—	—	40.5	5	37.4	5	21.3	6	—	—
Congenital Malformation	—	—	—	—	12.2	9	—	—	—	—
Tuberculosis	194.4	2	22.5	8	—	—	—	—	—	—
Diarrhea, Enteritis, and Ulceration of the Intestines	142.7	3	—	—	—	—	—	—	—	—
Nephritis	88.6	6	16.4	10	—	—	—	—	—	—
Senility	50.2	9	—	—	—	—	—	—	—	—
Diphtheria	40.3	10	—	—	—	—	—	—	—	—

* Includes asthma.

Note: — means below the ten leading causes of death.

Source: NCHS.

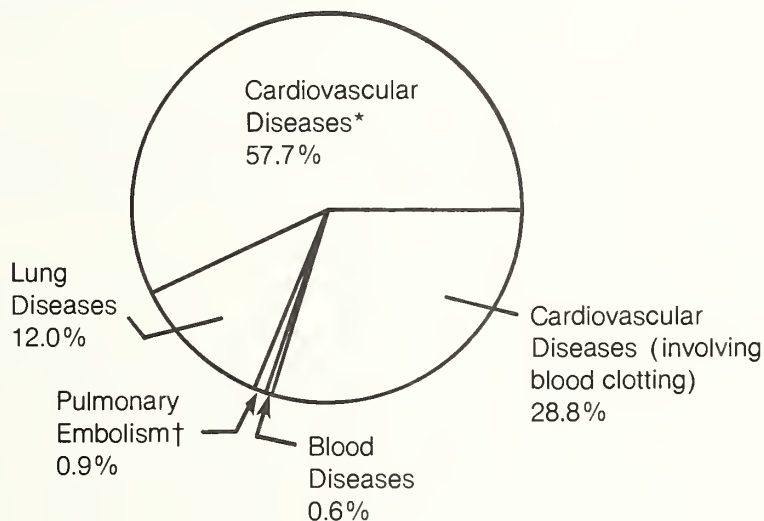
Number of Deaths from Cardiovascular, Lung, and Blood Diseases, U.S., 1968, 1978, 1980

Cause of Death	1968		1978		1980	
	Number	%	Number	%	Number	%
Cardiovascular Diseases	1,038,627	87.0	988,569	87.8	999,976	87.4
(involving blood clotting)	(412,329)	(34.5)	(345,433)	(30.7)	(328,943)	(28.8)
(pulmonary embolism)*	(9,686)	(.8)	(10,941)	(1.0)	(10,598)	(0.9)
Lung Diseases †	149,550	12.5	131,298	11.7	136,727	12.0
Blood Diseases †	5,799	0.5	5,889	0.5	7,091	0.6
Total	1,193,976	100.0	1,125,756	100.0	1,143,794	100.0

* Subcategory of cardiovascular diseases involving blood clotting.

† Does not include cancers, leukemias, and other neoplasms, or pulmonary embolism.

Percent Distribution of Cardiovascular, Lung, and Blood Disease Deaths, U.S., 1980



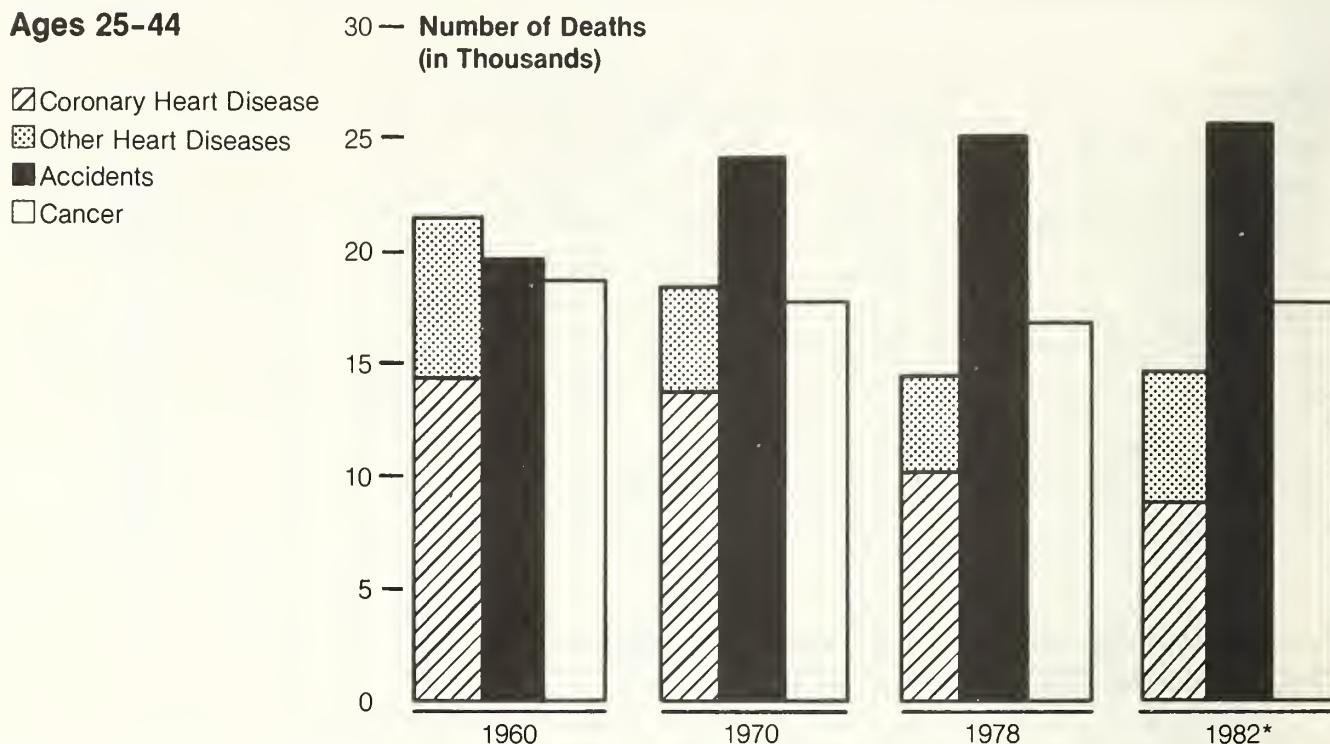
* Excludes blood clotting diseases and pulmonary embolism. Total CVD = 87.4%; also see table above.

† Subcategory of cardiovascular diseases involving blood clotting.

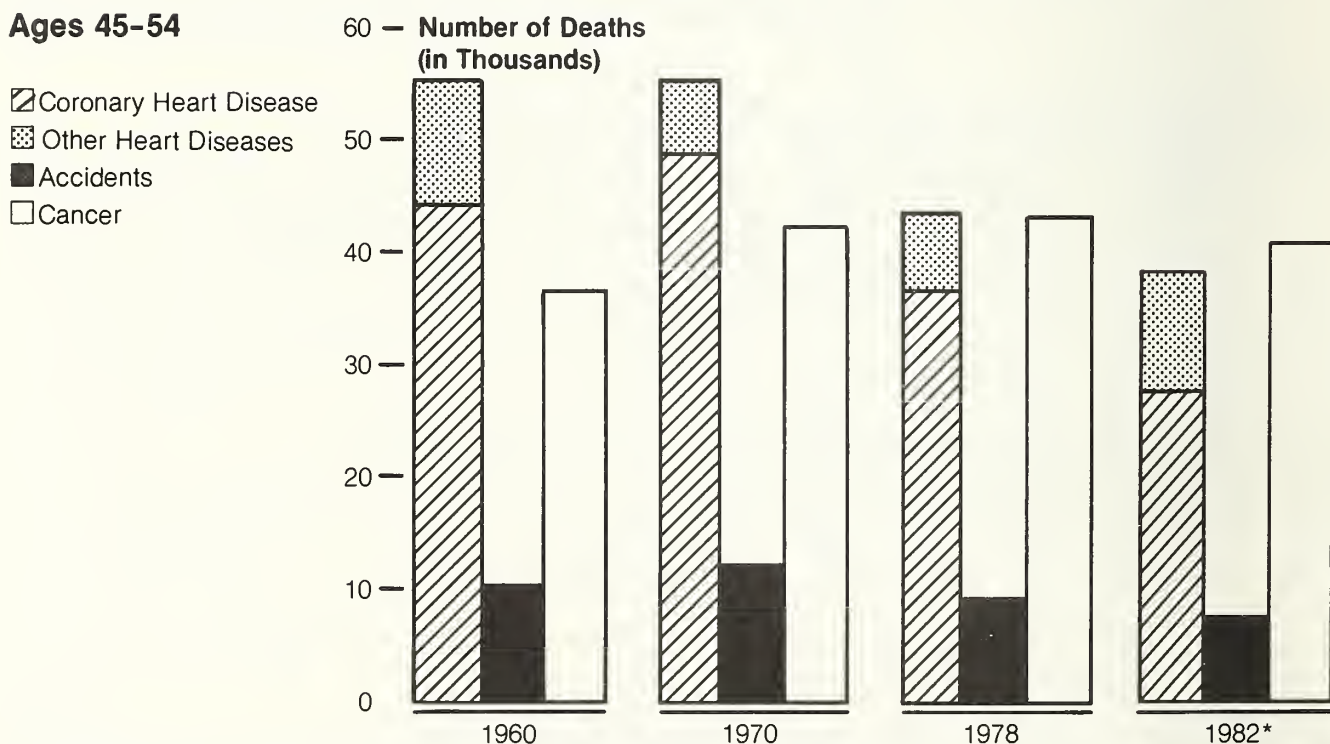
Source: NCHS; estimates by NHLBI.

Number of Deaths from the Three Leading Causes in Two Age Groups, U.S., 1960, 1970, 1978, 1982

Ages 25-44



Ages 45-54

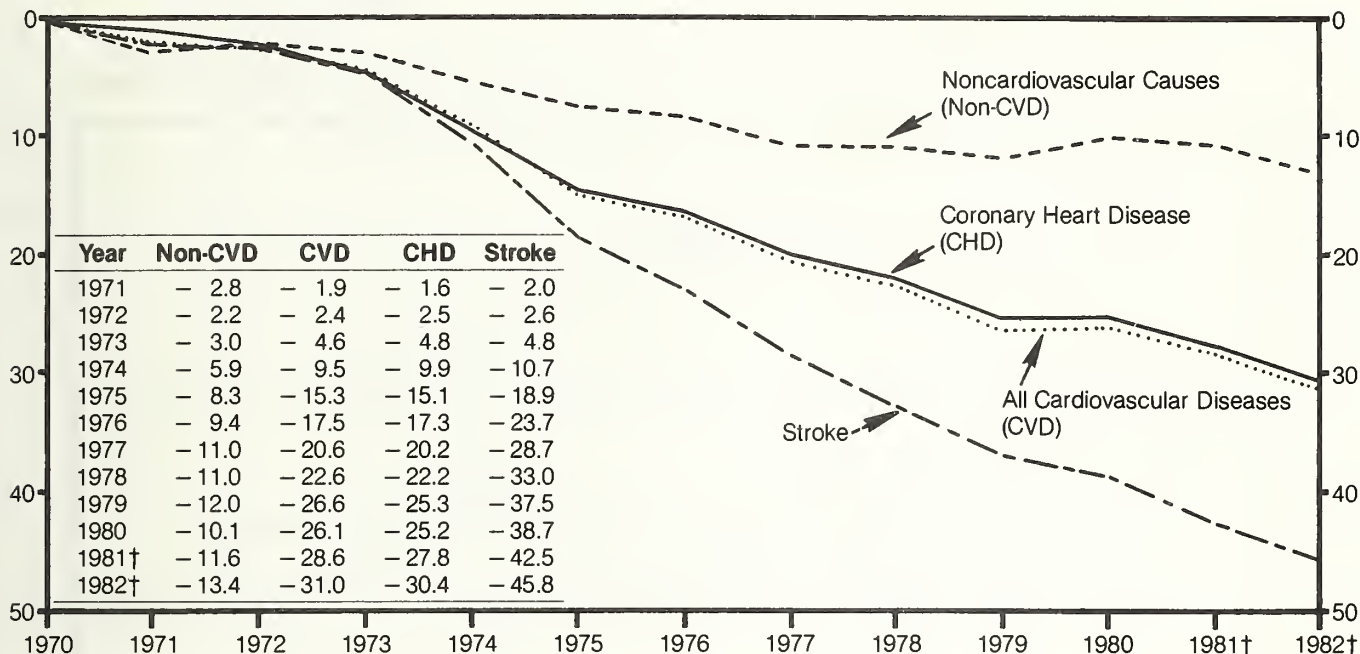


* Provisional and based on the Ninth Revision of the International Classification of Diseases, which assigns fewer deaths to coronary heart disease.

Source: NCHS; estimates by NHLBI.

Trends in Mortality for Cardiovascular Disease and Noncardiovascular Causes of Death: Decline by Age-Adjusted Death Rates,* U.S., 1970-1982

Percent Decline from 1970 Rates



Trends in Mortality for Cardiovascular Diseases (and Major Components) and Noncardiovascular Causes of Death, U.S., 1968-1982 (Death Rate per 100,000 Population*)

Year	Noncardiovascular Causes	Cardiovascular Diseases (CVD)			
		Total	Coronary Heart Disease	Stroke	Other CVD
1968	369.1	374.7	212.2	71.6	90.6
1969	365.5	363.0	206.2	68.6	88.2
1970	361.9	352.4	200.4	66.6	85.4
1971	351.9	345.7	197.1	65.3	83.3
1972	354.0	344.0	195.4	64.9	83.7
1973	351.2	336.1	190.7	63.4	82.0
1974	340.5	319.0	180.6	59.5	78.9
1975	331.9	298.5	170.1	54.0	74.4
1976	327.7	290.8	165.8	50.8	74.2
1977	322.2	279.9	159.8	47.5	72.6
1978	322.1	272.9	155.9	44.6	72.4
1979	318.4	258.6	149.7	41.8	67.1
1980	325.4	260.4	149.8	40.8	69.8
1981†	319.9	251.7	144.6	38.3	68.8
1982†	313.3	243.1	139.5	36.1	67.5

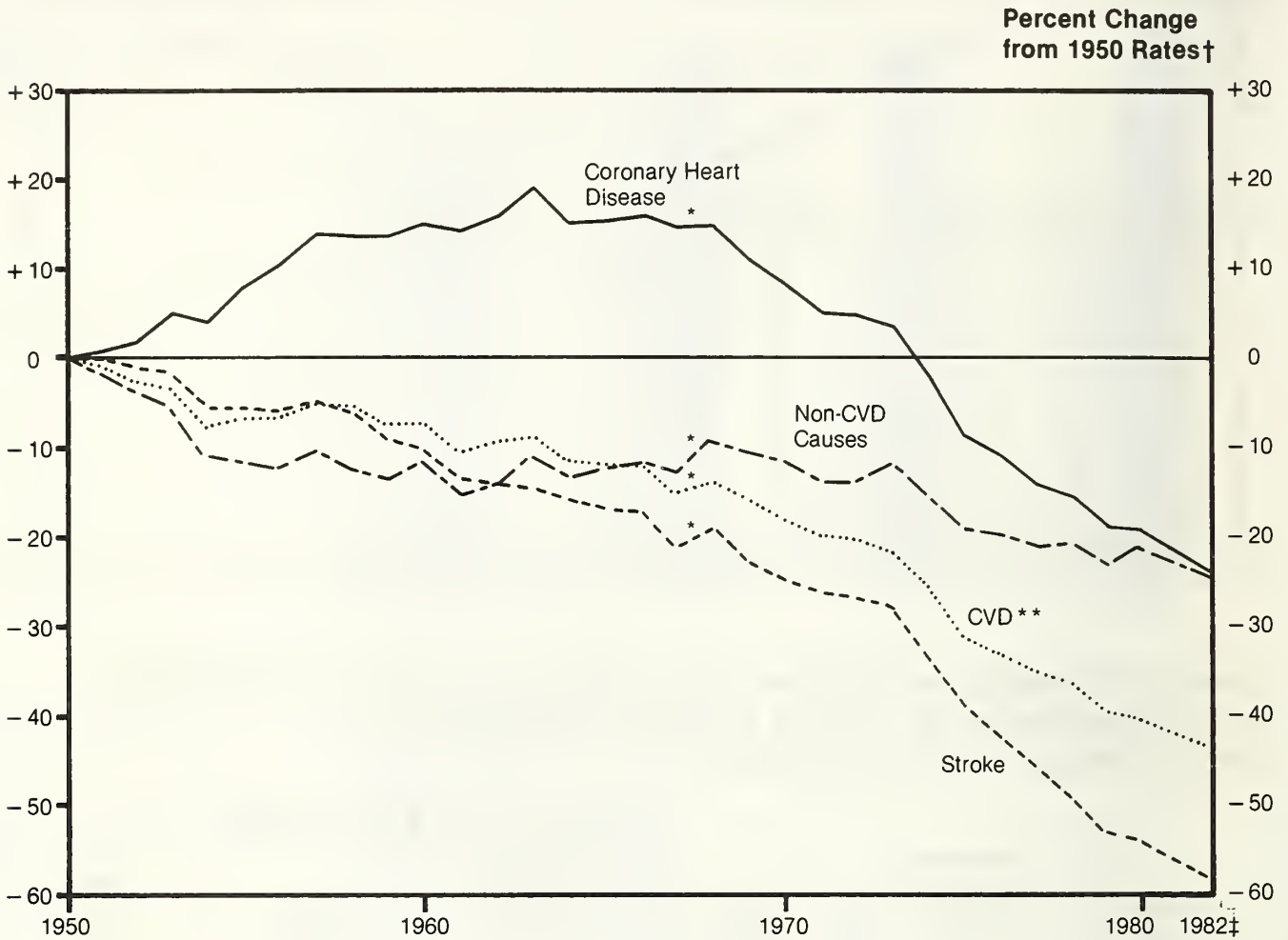
* Rates are age-adjusted to U.S. population, 1940.

† Provisional.

Note: Comparability ratios were applied to rates for 1968-1978 so they will be comparable to subsequent rates, which are based on the Ninth Revision of the International Classification of Diseases.

Source: NCHS; estimates by NHLBI.

Trends in Mortality for Cardiovascular Diseases (and Major Components) and Noncardiovascular Causes of Death, U.S., 1950-1982



Year	CVD**	Coronary Heart Disease	Stroke	Non-CVD Causes	Total All Causes
1950	425.6	185.2	88.8	415.9	841.5
1982‡	240.2	139.5	36.1	316.2	556.4
Change	-185.4	-45.7	-52.7	-99.7	-285.1
% Change in Death Rates	-43.6	-24.7	-59.3	-24.0	-33.9

* Revision of the International Classification of Diseases contributes to discontinuity between 1967 and 1968.

† Rates are age-adjusted to U.S. population, 1940.

‡ Provisional.

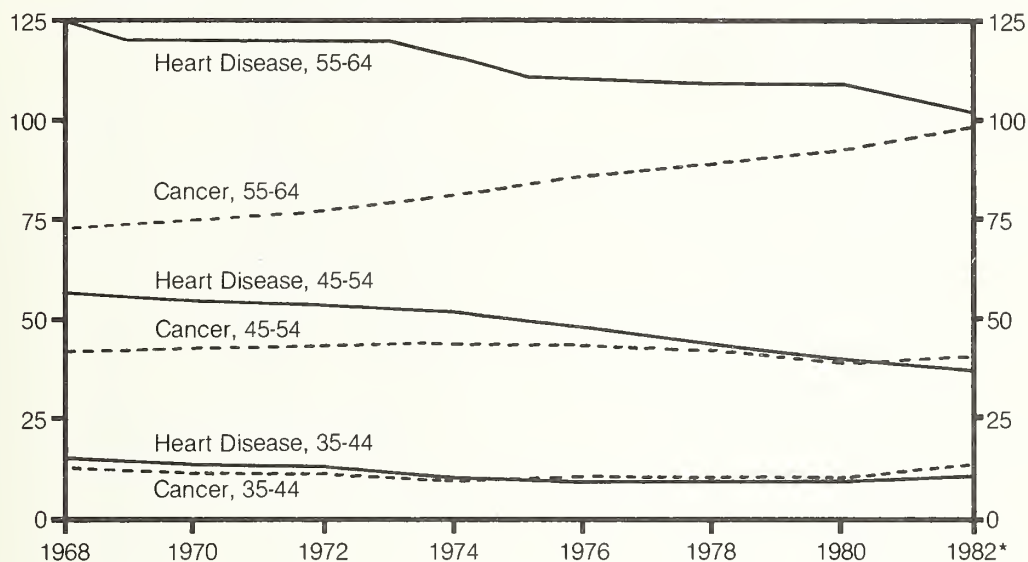
** Excludes congenital heart disease.

Note: CVD means Cardiovascular Diseases.

Source: NCHS; estimates by NHLBI.

Number of Deaths from Heart Disease and Cancer Among Three Age Groups, U.S., 1968-1982

**Number of Deaths
(in Thousands)**



Year	Age Group					
	35-44		45-54		55-64	
	Heart Disease			Cancer		
1968	16,700	57,200	124,246	14,396	41,593	74,792
1969	16,109	56,099	121,588	14,223	41,402	76,440
1970	15,402	55,365	121,253	13,734	42,370	78,630
1971	14,889	54,547	121,037	13,307	42,243	79,609
1972	14,300	54,352	121,780	13,130	42,634	81,580
1973	13,756	53,434	120,623	12,747	43,070	82,844
1974	12,672	51,317	115,241	12,529	43,762	85,255
1975	12,263	48,724	111,660	12,062	43,196	85,175
1976	11,687	47,230	110,839	11,856	43,025	87,968
1977	11,576	45,386	108,266	11,956	42,662	89,852
1978	11,369	43,679	107,885	12,071	42,767	91,348
1979	11,380	42,348	107,036	12,132	41,601	92,088
1980	11,433	41,078	107,244	12,470	41,030	94,645
1981*	11,454	40,357	106,894	12,988	40,527	96,453
1982*	11,700	37,880	102,380	12,820	40,040	97,910

* Provisional.

Source: NCHS; estimates by NHLBI.

Death Rates and Percentage Change in Rates for Selected Causes of Death, U.S., 1970-1982

Causes of Death	Rate per 100,000 Population*		Percent Change 1970-1982
	1970†	1982‡	
All Causes	714.3	556.4	- 22.1
Cardiovascular Diseases	352.4	243.1	- 31.0
Coronary Heart Disease	200.4	139.5	- 30.4
Stroke	66.6	36.1	- 45.8
Hypertensive Disease	16.3	8.3	- 49.1
Rheumatic Heart Disease	4.2	2.1	- 50.0
All Other CV Disease	64.9	57.1	- 12.0
All Other Causes	361.9	313.3	- 13.4
Cancers (Other than Lung)	103.6	97.3	- 6.1
Lung Cancer	26.6	36.0	+ 35.3
Accidents, Poisonings, Violence	77.3	64.9	- 16.0
Influenza and Pneumonia	20.5	11.3	- 44.9
Cirrhosis of the Liver	14.9	10.4	- 30.2
Diabetes	14.1	9.2	- 34.8
Chronic Obstructive Pulmonary Disease	11.8	15.3	+ 29.7
All Other	93.1	68.9	- 26.0

* Rates are age-adjusted to U.S. population, 1940.

† Comparability ratios applied so rates will be comparable to rates in 1982 by the Ninth Revision of the International Classification of Diseases.

‡ Provisional.

Source: NCHS; estimates by NHLBI.

Percent of All Deaths Due to Cardiovascular Diseases, Selected Years, 1940-1982, U.S.

Year	Percent
1940	45.1
1949†	51.7
1950	53.0
1960	54.6
1962‡	55.1
1970	53.7
1980	50.2
1981*	49.8
1982*	49.6

* Provisional.

† First year 50 percent or more.

‡ Peak year.

Note: Cardiovascular diseases include renal diseases up to 1950, exclude renal, and include congenital heart disease since 1950.

Prevalence of the Leading Chronic Conditions Causing Limitation of Activity, U.S., 1980

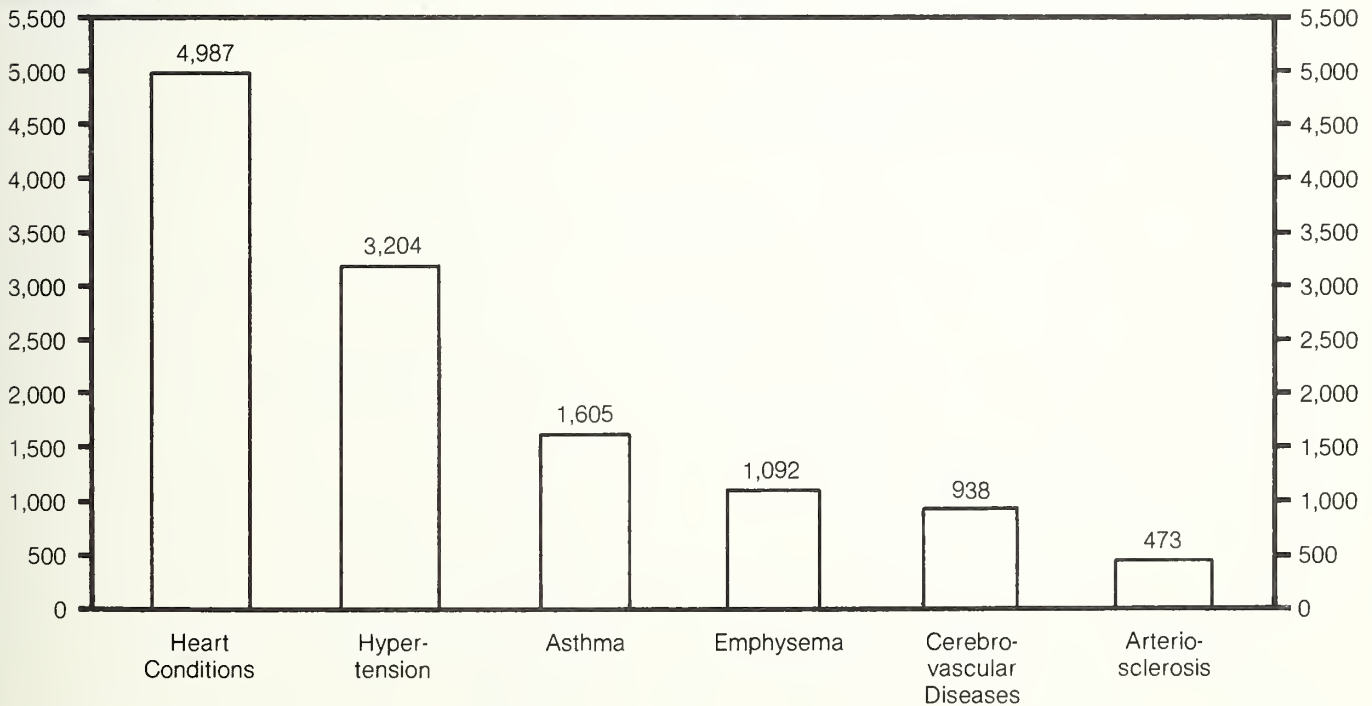
Rank	Condition	Estimated Prevalence (in Thousands)
1	Arthritis*	5,739
2	Deformities or Orthopedic Impairments	5,019
3	Heart Conditions	4,987
4	Hypertension*	3,204
5	Diabetes	1,807
6	Asthma	1,605
7	Visual Impairments	1,398
8	Displacement of Intervertebral Disc	1,257
9	Emphysema	1,092
10	Cerebrovascular Diseases	938
11	Paralysis	815
12	Diseases of the Urinary System	637
13	Hearing Impairments	587
14	Hernia of Abdominal Cavity	542
15	Arteriosclerosis*	473

* Not elsewhere classified.

Source: Health Interview Survey, NCHS (unpublished).

Prevalence of the Leading Chronic Conditions Causing Limitation of Activity, (in the Purview of the NHLBI), U.S., 1980

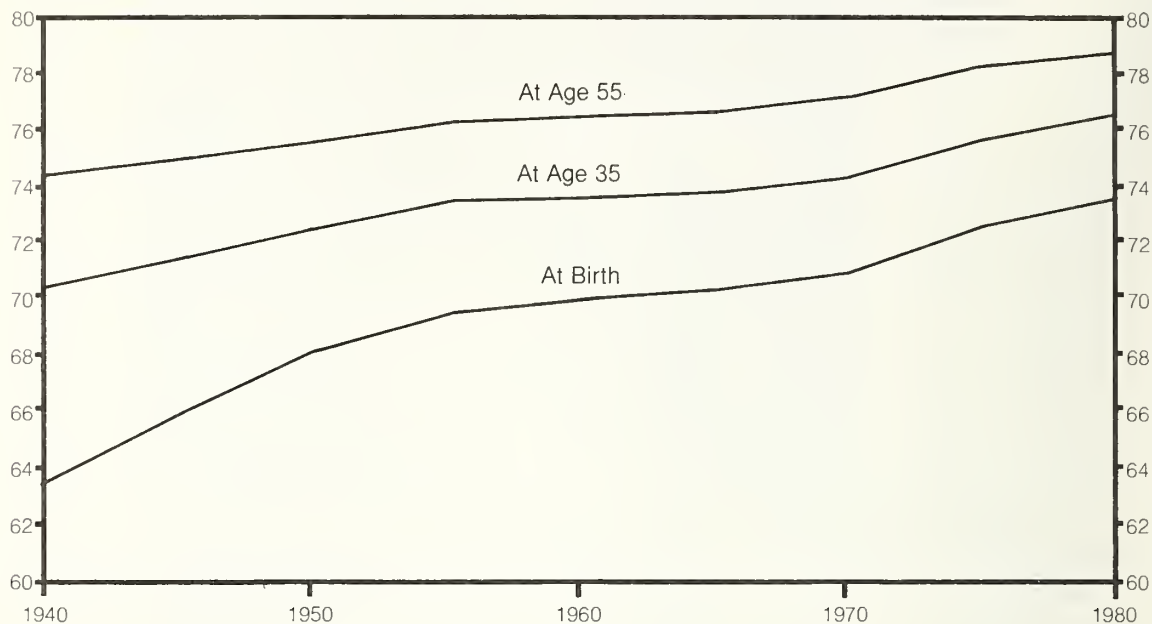
Prevalence (in Thousands)



Source: Health Interview Survey, NCHS (unpublished).

Increase in Life Expectancy at Birth, at Age 35, and at Age 55 for Total Population, U.S., 1940-1980

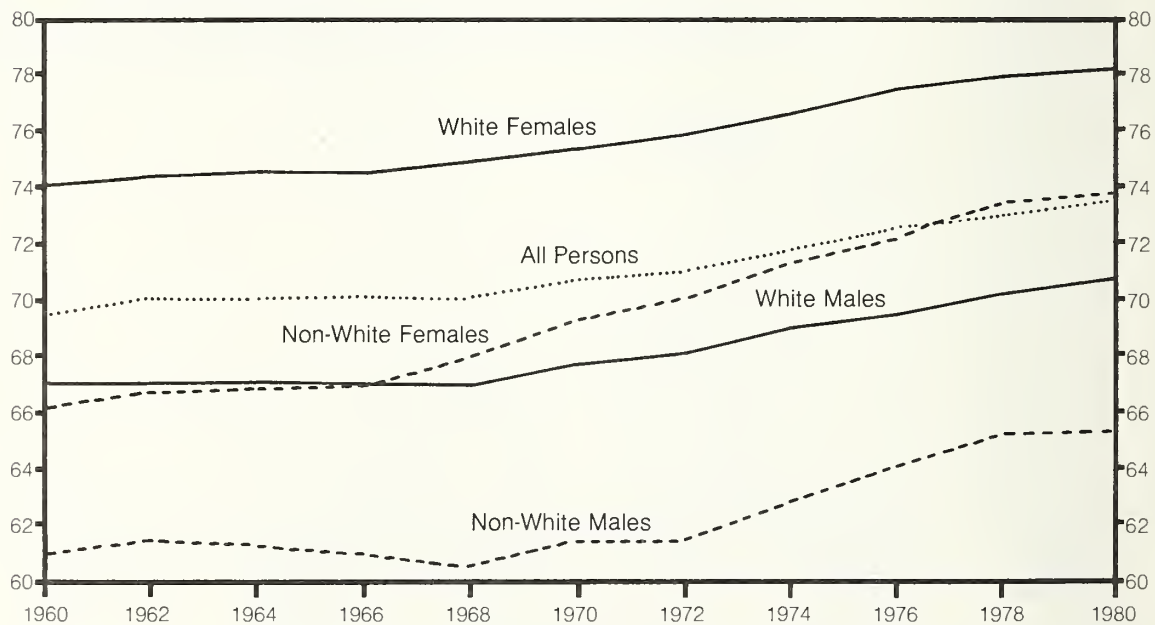
Average Life Expectancy



Source: NCHS; prepared by NHLBI.

Life Expectancy at Birth, U.S., 1960 to 1980

Expected Lifetime at Birth



Source: NCHS; prepared by NHLBI.

Trend in Death Rates for Coronary Heart Disease Among Men Ages 35-74 in Selected Countries, 1969 and 1978

Country	Percent Change in Rate	Rate per 100,000 Population (Age-Averaged)	
		1969	1978
United States	-23.9	852.5	648.4
Australia	-23.1	843.7	649.0
Japan	-21.4	126.3	99.2
Israel	-20.0	653.3	522.8†
Canada	-11.3	703.3	624.1*
New Zealand	-10.7	773.4	690.8
Norway	-7.3	583.0	540.6
Belgium	-4.3	446.1	426.8†
Finland	-2.6	893.7	870.1*
Czechoslovakia	+0.4	587.9	590.4‡
France	+1.1	195.2	197.4*
Italy	+1.7	313.0	318.4†
Ireland	+2.3	662.2	677.8*
Netherlands	+3.1	478.7	493.4
Denmark	+3.3	566.1	584.6
Scotland	+3.3	813.8	840.8
England and Wales	+3.5	662.1	685.6
Northern Ireland	+5.7	782.4	826.9
Austria	+7.4	428.3	460.1
Germany, F. R.	+9.2	427.3	466.6
Switzerland	+10.5	290.4	320.8
Sweden	+12.1	524.0	587.6
Hungary	+20.6	441.6	532.5
Yugoslavia	+23.0	185.0	227.6*
Bulgaria	+38.5	299.4	414.8
Romania	+45.6	170.5	248.2
Poland	+71.5	186.5	319.8

* 1977.

† 1976.

‡ 1975.

Source: World Health Organization.

Trend in Death Rates for Coronary Heart Disease Among Women Ages 35-74 in Selected Countries, 1969 and 1978

Country	Percent Change in Rate	Rate per 100,000 Population (Age-Averaged)	
		1969	1978
United States	-27.8	349.5	252.4
Australia	-26.7	348.9	255.6
Japan	-24.4	63.4	47.9
Israel	-20.3	366.1	291.9†
Canada	-19.6	276.9	222.7*
Norway	-18.0	199.4	163.4
Denmark	-16.3	236.0	197.6
Finland	-15.2	286.0	242.4
Belgium	-13.3	172.0	149.2†
Italy	-11.8	133.9	118.1†
New Zealand	-10.6	300.4	268.6
France	-9.2	70.7	64.2*
Netherlands	-7.9	171.4	157.8
Sweden	-6.3	206.0	193.0
Northern Ireland	-3.8	323.9	311.6
Scotland	-3.8	338.2	351.0
Ireland	-3.4	288.3	278.5*
Czechoslovakia	-2.7	259.5	252.5‡
Switzerland	-2.2	100.7	98.5
England and Wales	-1.6	236.5	240.3
Hungary	-0.3	231.1	231.9
Austria	-0.3	172.1	171.5
Germany, F. R.	+7.4	141.1	151.5
Bulgaria	+7.9	203.8	220.0
Yugoslavia	+8.4	98.4	106.7*
Romania	+31.9	102.1	134.7
Poland	+48.8	56.8	102.7

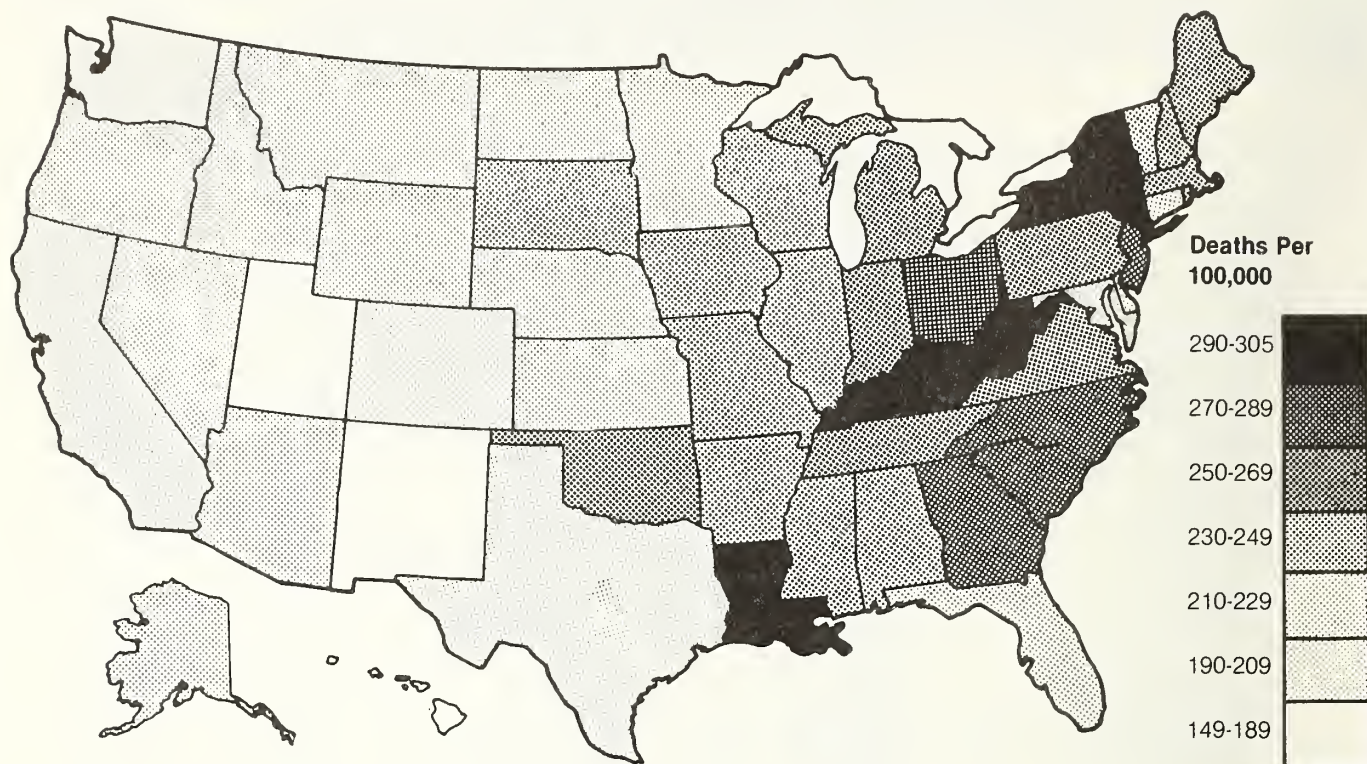
* 1977.

† 1976.

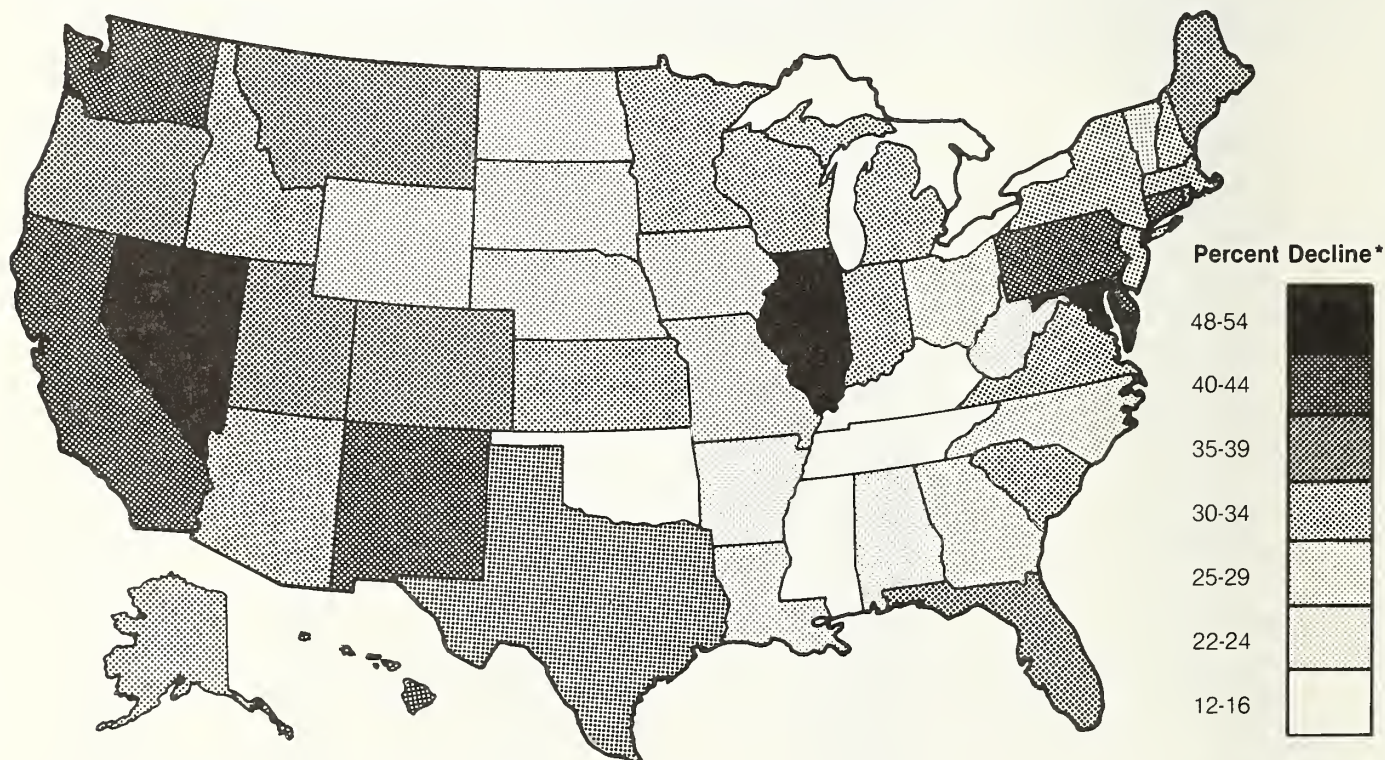
‡ 1975.

Source: World Health Organization.

**Age-Adjusted Mortality Rates by State, 1980:
Coronary Heart Disease in the Total Population Ages 35-74**

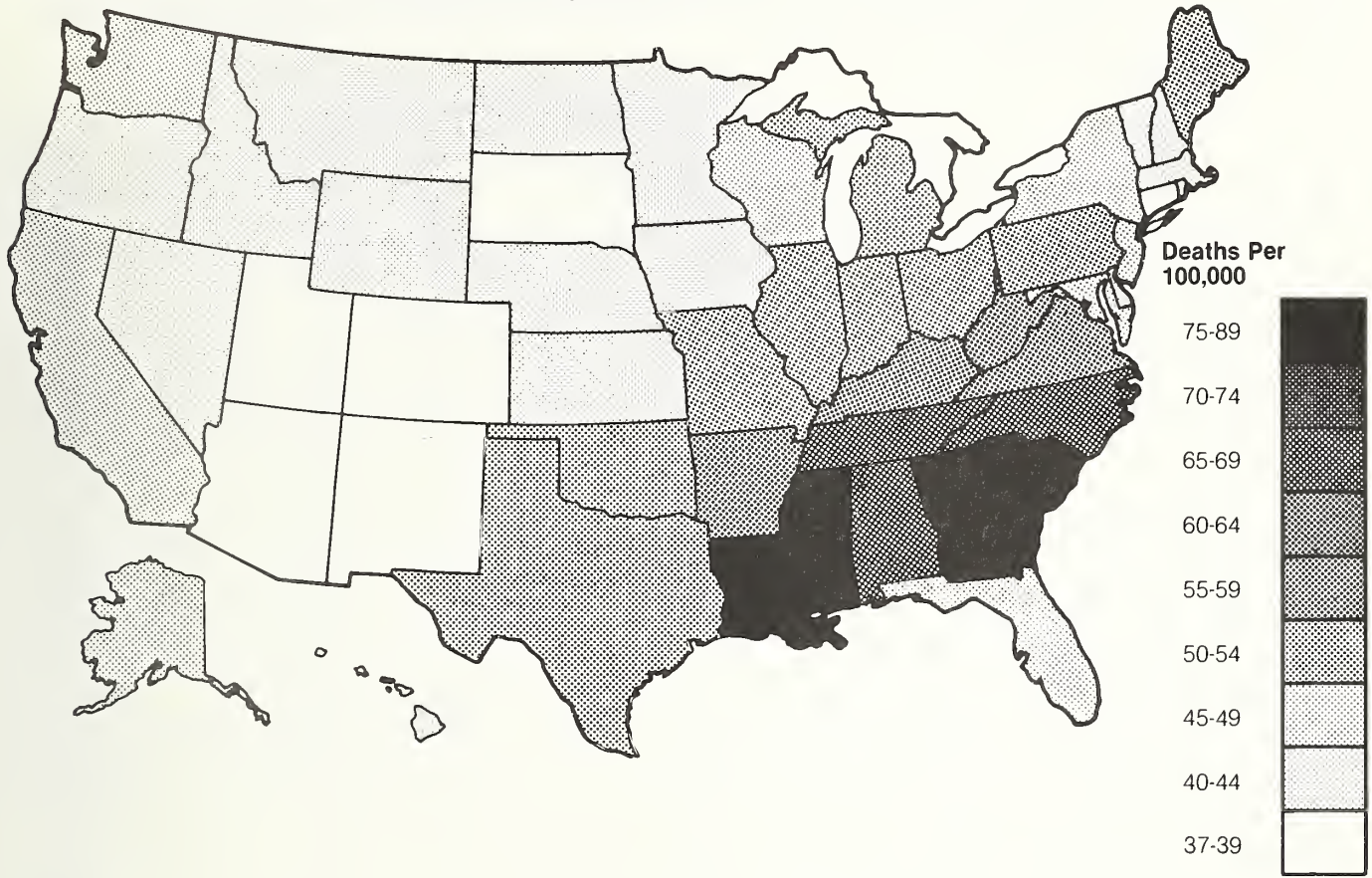


**1960-1980 Decline in Age-Adjusted Mortality Rates by State:
Coronary Heart Disease in the Total Population Ages 35-74**

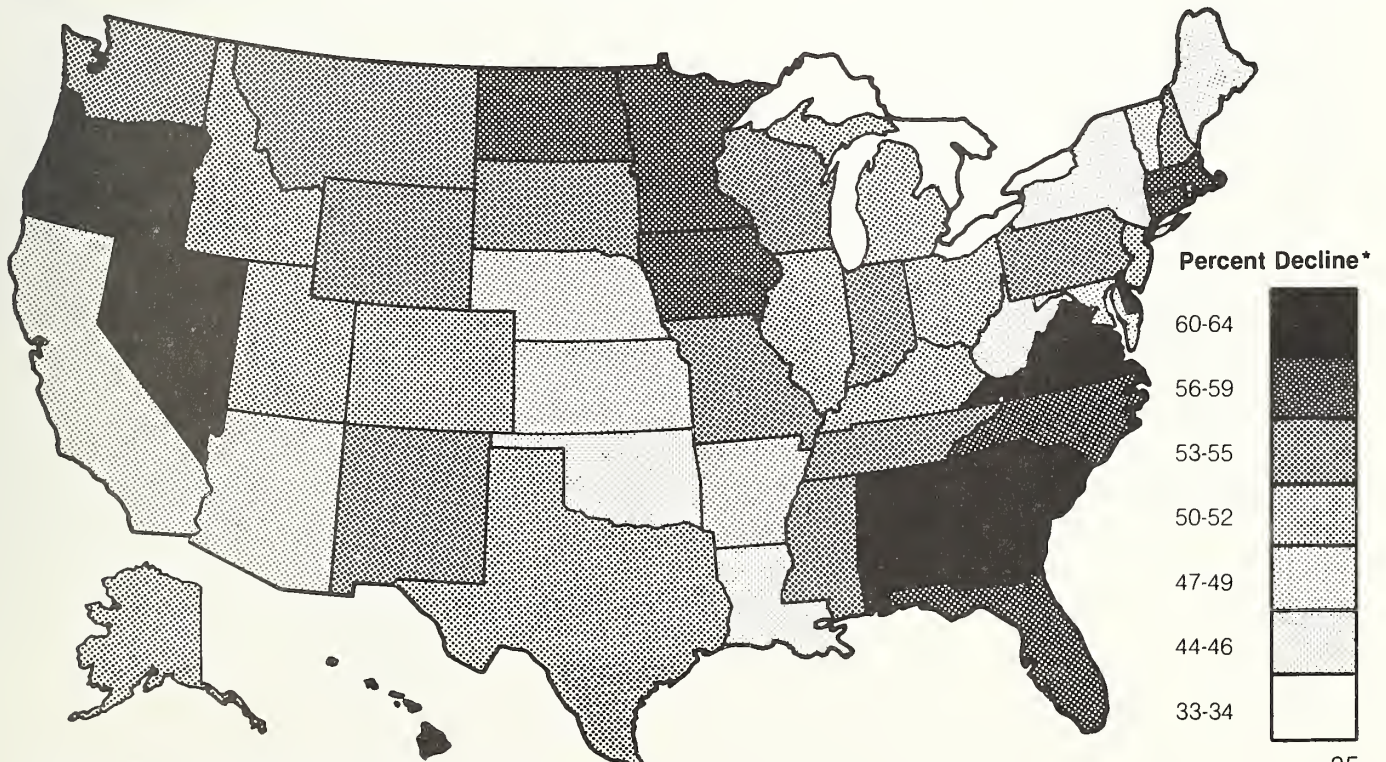


* Ranges may be discontinuous when there are no data falling into the gaps.

**Age-Adjusted Mortality Rates by State, 1980:
Stroke in the Total Population Ages 35-74**



**1960-1980 Decline in Age-Adjusted Mortality Rates by State:
Stroke in the Total Population Ages 35-74**



* Ranges may be discontinuous when there are no data falling into the gaps.

Direct and Indirect Economic Costs of Illness by Disease Category of Diagnosis, U.S., 1981

Diagnosis	Amount (\$ Billions)				Percentage Distribution*			
	Total	Direct Costs†	Indirect Costs		Total	Direct Costs†	Indirect Costs	
			Morbidity	Mortality‡			Morbidity	Mortality‡
<i>Cardiovascular diseases</i> (<i>involving blood clotting</i> (<i>pulmonary embolism</i>))*	96.9 (28.5) (1.1)	37.9 (7.7) (0.5)	11.1 (2.5) (0.5)	47.9 (18.2) (0.1)	20.4 (6.0) (0.2)	15.4 (3.1) (0.2)	15.8 (3.6) (0.7)	29.9 (11.4) (0.1)
<i>Lung diseases</i> ††	24.7	7.0	11.8	6.0	5.2	2.8	16.8	3.7
<i>Blood diseases</i> ††	2.1	1.4	0.3	0.4	0.4	0.6	0.4	0.2
<i>Subtotal</i>	\$123.7	\$ 46.3	\$23.2	\$ 54.3	26.0%	18.8%	33.1%	33.9%
Diseases of the digestive system	49.6	35.6	6.0	8.0	10.4	14.5	8.6	5.0
Neoplasms	51.1	15.2	2.8	33.1	10.7	6.2	4.0	20.7
Mental disorders	28.1	22.7	3.9	1.5	5.9	9.2	5.6	0.9
Diseases of the nervous system and sense organs	24.8	19.6	2.6	2.6	5.2	8.0	3.7	1.6
Diseases of the musculoskeletal system and connective tissue	24.3	15.2	8.5	0.6	5.1	6.2	12.1	0.4
Diseases of the genitourinary system	19.2	14.8	2.9	1.5	4.0	6.0	4.1	0.9
Endocrine, nutritional, and metabolic diseases	14.0	8.5	2.3	3.2	2.9	3.5	3.3	2.0
Infective and parasitic diseases	9.4	5.0	2.6	1.8	2.0	2.0	3.7	1.1
Diseases of the skin and subcutaneous tissue	7.9	6.9	0.9	0.1	1.7	2.8	1.3	0.1
Congenital anomalies	4.3	1.6	—	2.7	0.9	0.7	—	1.7
Other	119.4	54.3	14.4	50.7	25.1	22.1	20.5	31.7
Total*	\$475.9	\$245.7	\$70.1	\$160.1	100.0%	100.0%	100.0%	100.0%

* Numbers may not add to 100% due to rounding.

† Includes only personal health care expenditures allocated to diagnoses (86 percent of total direct health care expenditures).

‡ Based on a 6 percent discount rate of loss of future earnings because of premature death.

** Subcategory of cardiovascular diseases involving blood clotting.

†† Does not include cancers, leukemias, and other neoplasms, or pulmonary embolism.

— Numbers too small to estimate.

Source: NCHS; estimates by NHLBI.

6. PROCESSES OF PLANNING, IMPLEMENTATION, MANAGEMENT, AND EVALUATION

Planning

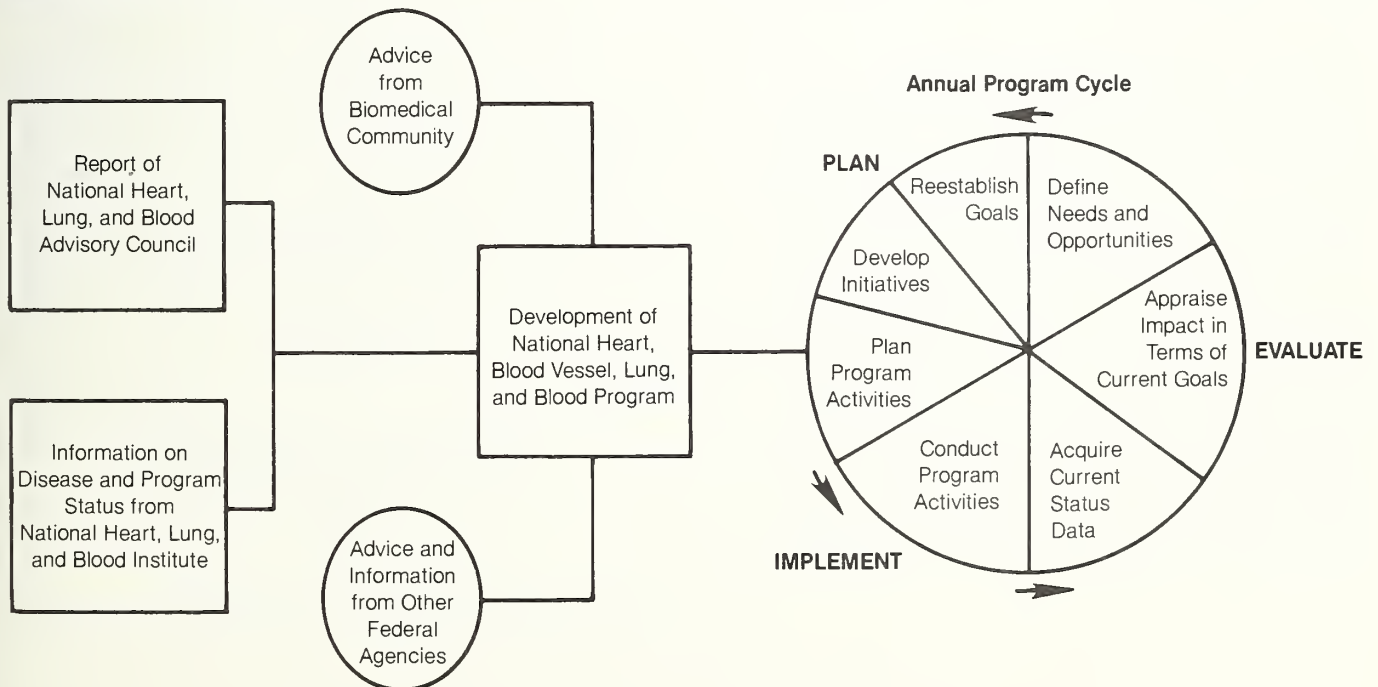
The Institute has just completed an intensive review of its goals, objectives, and achievements over the past 10 years. The results of this review, as well as new and revised goals and objectives for the next 5 years, are reported in the Ten-Year Review and Five-Year Plan of the National Heart, Blood Vessel, Lung, Blood Disease, and Blood Resources Program.

The initial 5-year plan was developed through the combined efforts of the NHLBI, the National Heart, Lung, and Blood Advisory Council, four national panels of consultants on heart and blood vessel diseases, lung diseases, blood diseases, and blood resources, the Interagency Technical Committee, comprising representatives of Federal agencies, and 28 task groups. Additional assistance was provided by a number of nonprofit voluntary agencies, public interest groups, and the scientific community.

This collaboration promoted interaction and joint planning among those who are at the forefront of the fields that make up the scientific constituency of the Institute, those who are responsible for carrying out the National Plan, and those who are ultimate "consumers" of the results of the Institute's programs. The plan is the basis for the Institute's many activities and for its annual cycle of program planning, evaluation, and coordination (figure 1).

Planning, as conducted by the Institute, is a continuous process that includes the development of policies and strategies at the national level through the setting of priorities among competing programs and the establishment of budgets for single programs or projects. Planning approaches vary. Some are highly specific, controlled techniques; others are relatively unstructured approaches with the flexibility necessary to promote research leading to important biomedical innovations.

Figure 1: Origin of the National Program and the Annual Program Cycle Formulation of National Program — 1972



The NHLBI planning process is a yearly cycle characterized by a continuous flow of information from the public, the biomedical research community, the medical community, other Federal agencies, and non-Federal organizations. The Institute is responsible for organizing this information and for using it to develop meritorious programs that are implemented within existing resources.

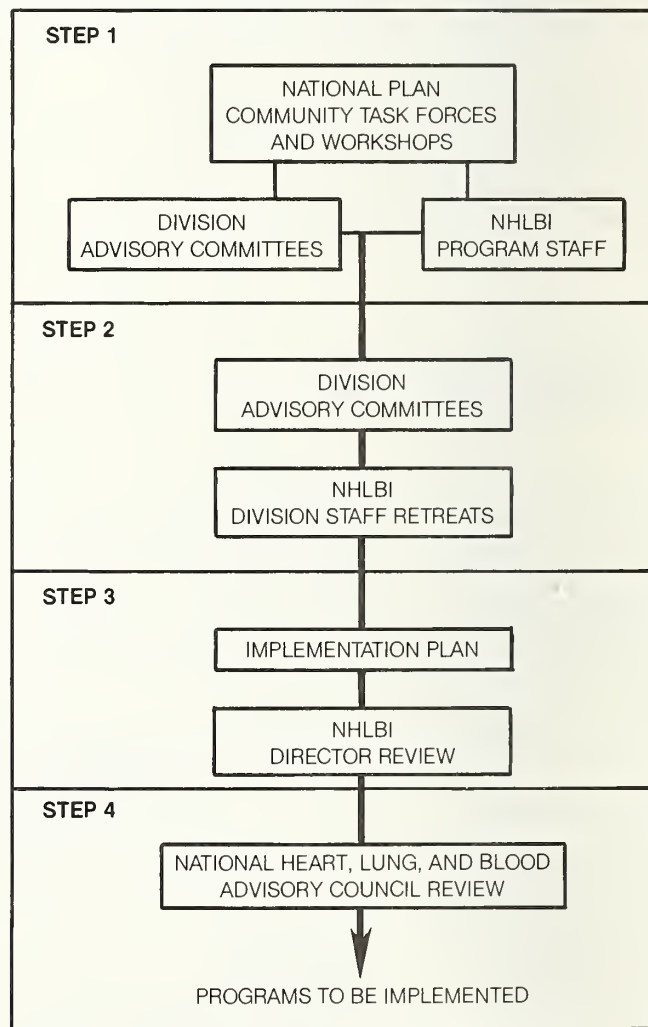
As part of this process, a series of reports and formal plans are developed each year. These documents, which serve as milestones in the annual planning process, are prepared by NHLBI staff members to structure and coordinate input from the NHLBI Advisory Council and from NHLBI committees and consultants. The documents serve as resource materials, implementation plans for program activities, and state-of-the-science assessments. They define program relationships, inform the Congress and the Administration of needs for accomplishing the 5-year plan, and provide the scientific community with information on the Institute's accomplishments. The planning process is key to the orderly development and implementation of the Institute's programs. Coordinated and timely involvement of those responsible for guiding the NHLBI ensures that the resultant plans and reports are dynamic and meaningful.

The NHLBI planning process consists of four distinct but overlapping steps that lead to the implementation of new programs or to the expansion, modification, or discontinuation of existing programs (figure 2).

Step 1. The first step in the process—review, assessment, and consensus—is centered on a series of interactions among the NHLBI program staff, the Institute's scientific advisory committees, and members of the general scientific community. Through an interactive process involving workshops, seminars, task forces, and technical working groups, the goals, objectives, and progress of the National Plan are reviewed against the state-of-the-science as reflected in the published scientific literature and the collective knowledge of the participating scientific experts. During this process, existing research strategies are examined and new ones are developed. The major tangible product of this first step in the planning process consists of preliminary lists of recommended research initiatives for the ensuing years.

Step 2. The second step in the process, setting priorities, is accomplished jointly by the program staff of each of the Institute's categorical divisions and the appropriate advisory committee. At this time, new initiatives are ranked according to the goals and objectives of the National Plan and are rated and ranked by groups of experts in their scientific program areas. Based on the advice and recommendations of these experts, NHLBI staff members further develop the more promising initiatives with reference to progress, results, and potential impact on ongoing programs; fiscal and schedule constraints; and program objectives. The initiatives are further reviewed and approved by the respective advisory committees. The tangible product of this step is a list of categorized initiatives in order of their priority.

Figure 2: The NHLBI Planning Process



Step 3. The third step in the process involves developing and reviewing the implementation plan and is conducted within the Institute. Each categorical division prepares an implementation plan that presents new initiatives in terms of their scientific and programmatic rationale and justification, funding mechanism, and management and fiscal plan. Each implementation plan is reviewed and analyzed by the Institute Director. The plans are then adjusted to reflect total available resources, congressional mandates, and intra-Institute, inter-Institute, and interagency program responsibilities. These adjustments are reviewed and negotiated with each Division. The result of this step is the NHLBI Implementation Plan and Program Budget.

Step 4. The fourth step in the process involves the National Heart, Lung, and Blood Advisory Council. Each new initiative or major program expansion is presented to, and reviewed by, the entire Advisory Council during open session. Council recommendation is solicited and obtained on each initiative, and Council advice on special areas for emphasis is received. This review provides for direct Council participation in the planning process. After the Advisory Council's review, the initiatives and other recommendations resulting from the planning process are ready for implementation.

Program Implementation

The NHLBI is structured and organized to achieve the objectives and to implement the programs of its authorizing legislation. It is a task of considerable magnitude, however, to ensure the continuing responsiveness of the Institute to evolving national needs, to corresponding changes in congressional mandates, and to the state-of-the-science. Furthermore, since mandates normally are broadly stated and have widespread implications, programs developed to fulfill

mandates vary in scope and direction. Some may affect a large segment of the population, while others affect a specific segment of the population that may need a solution to a particular problem.

Program implementation is a complex process that requires the availability and optimum utilization of scientific knowledge, human and financial resources, and facilities. The rapidity with which a specific mandate or approved initiative is translated into an operating project depends to a large degree on the availability of required resources. Implementation of the Institute's program is only possible through considerable planning, coordination of required resources, sound program management, and the interest and collaboration of dedicated experts in the scientific community.

Evaluation

The Institute's responsibility for programs does not terminate with their implementation. There is a continuing need to compare progress in each of the National Program areas with the specific goals and objectives outlined in the initial Five-Year Plan, to assess the state-of-the-science in areas covered by the NHLBI mission, and to identify areas of research needs and capitalize on scientific opportunities. The NHLBI evaluates its programs by relying upon a diverse set of techniques that are combined to form a disciplined strategy. The Institute's evaluation activities include:

- Collection and analysis of data to monitor continuing programs,
- Acquisition of expert scientific judgment to assess progress toward research objectives,
- Assessment of the results or effectiveness of concluded programs, and
- Detailed analyses of National Program goals and the appropriateness of planned Institute activities in meeting those goals.

7. COUNCIL, COMMITTEES, AND REVIEW

National Heart, Lung, and Blood Advisory Council

STRUCTURE

Chairman: Director, National Heart, Lung, and Blood Institute

Membership

The Secretary, Department of Health and Human Services (HHS), appoints 18 members: 11 members are leading medical or scientific authorities, 2 are selected from persons enrolled in medical residency programs, and 5 are from the general public and are leaders in fundamental or medical sciences, or in public affairs.

Members are appointed for overlapping terms of 4 years.

The Council includes the following ex-officio members:

- Secretary, Department of Health and Human Services
- Director, National Institutes of Health
- Director, Office of Science and Technology Policy
- Chief Medical Officer, Veterans Administration
- Medical Officer Designee, Department of Defense

FUNCTIONS

The National Heart, Lung, and Blood Advisory Council reviews applications for grants-in-aid relating to re-

search projects in heart, blood vessel, lung, and blood diseases and in blood resources, and recommends to the Director, NIH, the approval of scientific projects that merit support.

In its advisory role, the Council advises the Secretary, HHS, and the Directors, NIH and NHLBI, on matters relating to the causes, prevention, and methods of diagnosis and treatment of diseases and resources within the purview of the Institute; collects information on studies conducted in the U.S. and abroad relating to these diseases and resources, and makes such information available to the biomedical community and the public; makes recommendations to the Director, NIH, regarding the acceptance of conditional gifts pursuant to Section 501 of the PHS; advises and assists the Director, NHLBI, regarding the National Heart, Lung, and Blood Disease Program; and submits a yearly report to the President and to Congress on progress of program objectives; recommends areas of research to be supported by the awarding of research and development contracts, and recommends the percentage of the Institute's budget that should be expended for such contracts.

MEETINGS

The chairman convenes meetings not fewer than four times a year and approves the agenda.

MEMBERSHIP*

Dr. Claude Lenfant (*Chairman*)
Director
National Heart, Lung, and Blood Institute
National Institutes of Health
Bethesda, Maryland 20205

Mrs. Catherine B. Bauer (1984)
Arthritis Coordinator
Pennsylvania Department of Health
Harrisburg, Pennsylvania 17108

Dr. John E. Connolly (1985)
Professor and Chairman, Division of
Thoracic Cardiovascular Surgery
Department of Surgery
University of California College of Medicine
Irvine, California 92717

Dr. Dale H. Cowan (1985)
Director
Division of Hematology and Oncology
Marymount Hospital
Cleveland, Ohio 44125

Mrs. Suzanne Cummings (1986)
Beverly Hills, California 90212

Dr. Michael E. DeBakey (1986)
Chancellor
Baylor College of Medicine
Houston, Texas 77030

Dr. Matthew B. Divertie (1986)
Staff Physician and Professor of Medicine
Division of Thoracic Diseases
Department of Internal Medicine
Mayo Medical School
Rochester, Minnesota 55905

Dr. Celia J. Flinn (1984)
Assistant Professor of Pediatrics (Cardiology)
Division of Pediatric Cardiology
University of Arizona Health Sciences Center
Tucson, Arizona 85724

Dr. Peter C. Gazes (1983)
Professor and Director, Cardiovascular Division
Medical University of South Carolina
College of Medicine
Charleston, South Carolina 29403

Dr. Roberta M. Goldring (1984)
Associate Professor of Medicine
New York University School of Medicine
New York, New York 10016

Dr. Maryl R. Johnson (1983)
Associate in Cardiology
Department of Internal Medicine
University of Iowa College of Medicine
Iowa City, Iowa 52242

Dr. Howard E. Morgan (1983)
Evan Pugh Professor of Physiology
Department of Physiology
The Pennsylvania State University
College of Medicine
Hershey, Pennsylvania 17033

Dr. Sanford A. Mullen (1986)
President and Medical Director
Jacksonville Blood Bank, Inc.
Jacksonville, Florida 32203

Dr. Harold R. Roberts (1984)
Professor of Medicine
University of North Carolina School of Medicine
Chapel Hill, North Carolina 27514

Dr. John Ross, Jr. (1984)
Director, Cardiovascular Division
University of California, San Diego,
School of Medicine
La Jolla, California 92093

Dr. Joseph C. Ross (1985)
Professor of Medicine
Associate Vice Chancellor for Medical Affairs
Vanderbilt University School of Medicine
Nashville, Tennessee 37232

Mrs. Jane S. Scott (1985)
Graham, North Carolina 27253

Dr. Douglas M. Surgenor (1983)
President, Center for Blood Research
Boston, Massachusetts 02115

Mrs. Doris Tulcin (1983)
National President
Cystic Fibrosis Foundation
Rockville, Maryland 20852

Ms. Anne M. Heasty (*Executive Secretary*)
Division of Extramural Affairs
National Heart, Lung, and Blood Institute
National Institutes of Health
Bethesda, Maryland 20205
(301) 496-7548

Ex-Officio Members

Dr. James B. Wyngaarden
Director
National Institutes of Health
Bethesda, Maryland 20205

Dr. Gordon D. Wallace
Senior Policy Analyst
Office of Science and Technology Policy
Executive Office of the President
Washington, D.C. 20506

Dr. Ross D. Fletcher
Chief, Cardiovascular Division
Department of Medicine and Surgery
Veterans Administration Medical Center
Washington, D.C. 20422

Dr. William P. Baker
Head, Cardiovascular Branch
Department of Medicine
National Naval Medical Center
Bethesda, Maryland 20814

* Current as of December 15, 1983.

Public Advisory and Review Groups to the NHLBI Divisions

Division of Heart and Vascular Diseases

ARTERIOSCLEROSIS, HYPERTENSION, AND LIPID METABOLISM ADVISORY COMMITTEE

Chairman: Dr. Thomas B. Clarkson, Wake Forest University

Executive Secretary: Dr. Gardner C. McMillan, Associate Director for Arteriosclerosis, Hypertension, and Lipid Metabolism, Division of Heart and Vascular Diseases, NHLBI, National Institutes of Health, Bethesda, Maryland 20205, (301) 496-1613

The Arteriosclerosis, Hypertension, and Lipid Metabolism Advisory Committee advises the Secretary, HHS, and the Directors, NIH and the Division of Heart and Vascular Diseases, NHLBI, on the planning, execution, and evaluation of the Institute's extramural programs, including those relating to grants, contracts, specialized centers of research, and research and demonstration centers in the general areas of lipid metabolism and the etiology and pathogenesis of arteriosclerosis and of hypertension. The committee counsels and assists in the scientific design and review of current programs, particularly with regard to content, relevance to the appropriate portions of the Institute's National Heart, Blood Vessel, Lung, and Blood Program, and cost. The committee also identifies and evaluates future research needs and opportunities and programs in these areas.

Membership*

Dr. Kathryn W. Ballard (1985)
University of California, Los Angeles

Dr. Sandra R. Bates (1986)
University of Chicago

Dr. Virgil W. Brown (1986)
Mount Sinai School of Medicine

Dr. William E. Connor (1985)
Oregon Health Sciences University

Dr. Oscar A. Carretero (1987)
Henry Ford Hospital (1987)

Dr. Lillian R. Elveback (1987)
Mayo Medical School

Dr. DeWitt S. Goodman (1987)
Columbia University

Dr. Francis J. Haddy (1986)
Uniformed Services University of the Health Sciences

Dr. Stephen B. Hulley (1987)
University of California, San Francisco

Dr. Andrew H. Kang (1986)
University of Tennessee, Memphis

Dr. Connie S. McCaa (1984)
University of Mississippi

Dr. Shirley M. Mueller (1985)
Indiana University

Dr. Lot B. Page (1986)
Newton-Wellesley Hospital

Dr. Virgie G. Shore (1984)
Lawrence Livermore National Laboratory

Dr. Charles F. Sing (1984)
University of Michigan, Ann Arbor

Dr. John M. Stewart (1985)
University of Colorado Health Sciences Center

Dr. Bonita W. Wyse (1987)
Utah State University, Logan

CARDIOLOGY ADVISORY COMMITTEE

Chairman: Dr. Arthur J. Moss, University of Rochester

Executive Secretary: Dr. Eugene Passamani, Associate Director for Cardiology, Division of Heart and Vascular Diseases, NHLBI, National Institutes of Health, Bethesda, Maryland 20205, (301) 496-5421

The Cardiology Advisory Committee advises the Secretary, HHS, and the Directors, NIH and the Division of Heart and Vascular Diseases, NHLBI, on planning, execution, and evaluation of the Institute's extramural programs, including those related to grants, contracts, and specialized centers of research in the general area of cardiology, including cardiac disease, cardiovascular function, and relevant technological developments. The committee also advises and assists in scientific design and review of current programs.

* Current as of December 15, 1983

CARDIOLOGY ADVISORY COMMITTEE (Cont.)

Membership*

- Dr. Robert W. Barnes (1984)
Medical College of Virginia
- Dr. L. Maximilian Buja (1984)
University of Texas Health Science Center
- Dr. Robert L. Frye (1987)
Mayo Clinic
- Dr. Lael C. Gatewood (1984)
University of Minnesota, Minneapolis-St. Paul
- Dr. Joak Han (1985)
Union University
- Dr. Julien I. E. Hoffman (1987)
University of California, San Francisco
- Dr. Kenneth H. Keller (1986)
University of Minnesota, Minneapolis-St. Paul
- Dr. Francis J. Klocke (1985)
State University of New York, Buffalo
- Dr. Beverly H. Lorell (1987)
Beth Israel Hospital
- Dr. Benedict R. Lucchesi (1985)
University of Michigan, Ann Arbor
- Dr. Dwight C. McGoon (1985)
Mayo Medical School
- Dr. Charles E. Rackley (1986)
Georgetown University
- Dr. Shahbudin H. Rahimtoola (1986)
University of Southern California
- Dr. Andrew G. Wallace (1984)
Duke University
- Dr. Nanette K. Wenger (1986)
Emory University

CLINICAL APPLICATIONS AND PREVENTION ADVISORY COMMITTEE

Chairman: Dr. Jorge C. Rios, The George Washington
University Medical Center

Executive Secretary: Dr. William T. Friedewald,
Associate Director for Clinical Applications and Pre-
vention, Division of Heart and Vascular Diseases,
NHLBI, National Institutes of Health, Bethesda,
Maryland 20205, (301) 496-2533

The Clinical Applications and Prevention Advisory
Committee advises the Secretary, HHS, and the
Directors, NIH and the Division of Heart and Vascular
Diseases, NHLBI, on policy matters relating to the
epidemiological and biometrics research programs,
clinical trials, and preventive cardiology programs,
and appraises ongoing studies in these areas. It
evaluates ongoing contracts, grants, and reimburs-
able agreements for scientific content and program
relevance. The advisory committee also identifies
research opportunities and needs for prevention and
application of knowledge for the control of heart and
vascular disease.

Membership*

- Dr. Nemat O. Borhani (1985)
University of California, Davis
- Dr. Marger A. Chesney (1987)
SRI-International
- Dr. Charles L. Curry (1986)
Howard University
- Dr. Olive J. Dunn (1987)
University of California, Los Angeles
- Dr. Scott M. Grundy (1986)
University of Texas Health Science Center
- Dr. Richard A. Kronmal (1984)
University of Washington, Seattle
- Dr. Ronald M. Lauer (1985)
University of Iowa
- Dr. Patricia D. Mullen (1987)
University of Texas Health Sciences Center
- Dr. John F. Mueller (1984)
St. Luke's Hospital, Denver
- Dr. John P. Naughton (1985)
State University of New York, Buffalo
- Dr. Albert Oberman (1986)
University of Alabama, Birmingham

* Current as of December 15, 1983.

Division of Lung Diseases

PULMONARY DISEASES ADVISORY COMMITTEE

Chairman: Dr. Hans Weill, Tulane University

Executive Secretary: Dr. Suzanne S. Hurd, Acting Director, Division of Lung Diseases, NHLBI, National Institutes of Health, Bethesda, Maryland 20205, (301) 496-7208

The Pulmonary Diseases Advisory Committee advises the Secretary, HHS, and the Directors, NIH and the Division of Lung Diseases, NHLBI, on aims, progress, and productivity of goal-oriented programs of the Institute, such as Pulmonary Specialized Centers of Research, Research and Demonstration Centers, and research contracts. The committee also identifies research opportunities and evaluates current and future program needs in the pulmonary disease area.

Membership*

Dr. A. Sonia Buist (1985)
Oregon Health Sciences University

Dr. Reuben M. Cherniack (1986)
National Jewish Hospital and Research Center

Dr. Noreen M. Clark (1987)
University of Michigan, Ann Arbor

Dr. Edwin B. Fisher (1984)
Washington University

Dr. Marlys H. Gee (1985)
Thomas Jefferson University

Dr. C. Norman Gillis (1987)
Yale University School of Medicine

Dr. Margit Hamosh (1984)
Georgetown University

Dr. Thomas M. Hyers (1986)
St. Louis University School of Medicine

Dr. Lee V. Leak (1986)
Howard University

Dr. Gloria D. Massaro (1986)
University of Miami

Dr. Roger Menendez (1984)
Fisions Corporation

Dr. Jay A. Nadel (1985)
University of California, San Francisco

Dr. Hal B. Richerson (1987)
University of Iowa

Dr. Gordon L. Snider (1984)
Boston University

Dr. Lynn M. Taussig (1987)
Arizona Health Sciences Center

Division of Blood Diseases and Resources

BLOOD DISEASES AND RESOURCES ADVISORY COMMITTEE

Chairperson: Dr. Doris Menache, American Red Cross

Executive Secretary: Dr. Fann Harding, Special Assistant to the Director, Division of Blood Diseases and Resources, NHLBI, National Institutes of Health, Bethesda, Maryland 20205, (301) 496-1817

The Blood Diseases and Resources Advisory Committee advises the Secretary, HHS, and the Director, NIH, on long-range goals; reviews program proposals; identifies research opportunities; and makes recommendations to the Director, Division of Blood Dis-

eases and Resources, NHLBI, regarding plans for program development and implementation. The committee also assesses programs and evaluates ongoing programs in relation to goals.

Membership*

Dr. Louis M. Aledort (1985)
Mount Sinai School of Medicine

Dr. Marion I. Barnhart (1986)
Wayne State University

Dr. Samuel Charache (1986)
Johns Hopkins University

* Current as of December 15, 1983.

BLOOD DISEASES AND RESOURCES ADVISORY COMMITTEE (Cont.)

Dr. Tibor J. Greenwalt (1987)
University of Cincinnati

Dr. Robert C. Hartman (1984)
University of South Florida

Dr. John C. Hoak (1985)
University of Iowa

Dr. Ernst R. Jaffe (1986)
Yeshiva University

Dr. John J. McCullough (1986)
University of Minnesota, Minneapolis-St. Paul

Dr. David G. Nathan (1987)
Children's Hospital Medical Center

Dr. David Satcher (1984)
Meharry Medical College

Dr. Leonard B. Seeff (1987)
Veterans Administration Medical Center

Dr. Stephen B. Shohet (1985)
University of California, San Francisco

Dr. Sherril J. Slichter (1984)
Puget Sound Blood Center

Dr. Frank E. Trobaugh (1984)
Rush-Presbyterian-St. Luke's Medical Center

Dr. Peter N. Walsh (1986)
Temple University

Dr. Carolyn Whitsett (1985)
Emory University

Dr. Marjorie P. Wilson (1987)
University of Maryland Medical School

SICKLE CELL DISEASE ADVISORY COMMITTEE

Chairman: Dr. Doris L. Wethers, St. Luke's-Roosevelt Hospital

Executive Secretary: Dr. Clarice Reid, Chief, Sickle Cell Disease Branch, Division of Blood Diseases and Resources, NHLBI, National Institutes of Health, Bethesda, Maryland 20205, (301) 496-6931

The Sickle Cell Disease Advisory Committee advises the Secretary, HHS, or a designee on the Sickle Cell Disease Program and on suggested priorities within that program. The committee also makes recommendations concerning planning, execution, and evaluation of all aspects of the program.

Membership*

Dr. Sara C. Finley (1986)
University of Alabama Medical School

Dr. Alfred P. Kraus (1984)
University of Tennessee Center for Health Sciences

Dr. Robert L. Lownes (1984)
Meharry Medical College

Dr. Naomi L. Luban (1984)
Children's Hospital National Medical Center

Dr. Roland B. Scott (1986)
Howard University

Dr. Elizabeth R. Simons (1984)
Boston University

Mr. Willie Stargell (1985)
Willie Stargell Foundation, Pittsburgh

Dr. Richard V. Worrell (1986)
New York Medical College

Ex-Officio Members

Lt. Col. Henry P. Wetzler
Uniformed Services, University of the Health Sciences

Dr. Bruce L. Evatt
Centers for Disease Control

Dr. Thomas E. Malone
National Institutes of Health

Dr. Leo M. Meyer
Veterans Administration Extended Care Center

Dr. Allan Noonan
Health Resources and Services Administration

* Current as of December 15, 1983.

Division of Extramural Affairs

CLINICAL TRIALS REVIEW COMMITTEE

Chairperson: Dr. Millicent W. Higgins, University of Michigan, Ann Arbor

Executive Secretary: Dr. Charles G. Hollingsworth, Review Branch, Division of Extramural Affairs, NHLBI, National Institutes of Health, Bethesda, Maryland 20205, (301) 496-7363

The Clinical Trials Review Committee provides technical advice to the Directors, NIH and NHLBI, and to the National Heart, Lung, and Blood Advisory Council, including initial review of applications for the support of studies to evaluate preventive or therapeutic measures in blood, cardiovascular, or lung diseases, particularly through cooperative studies or controlled clinical trials. The committee also provides scientific merit review for such studies that seek grant or contract support from the NHLBI.

Membership*

Dr. Byron W. Brown (1987)
Stanford University

Dr. Lawrence S. Cohen (1985)
Yale University

Dr. Samuel W. Greenhouse (1986)
The George Washington University

Dr. Jennifer M. Loggie (1987)
Children's Hospital, Cincinnati

Dr. Gerald E. Thomson (1984)
Columbia University

HEART, LUNG, AND BLOOD RESEARCH REVIEW COMMITTEE A

Chairman: Dr. Joseph C. Greenfield, Duke University

Executive Secretary: Dr. Peter M. Spooner, Review Branch, Division of Extramural Affairs, NHLBI, National Institutes of Health, Bethesda, Maryland 20205, (301) 496-7265

The Heart, Lung, and Blood Research Review Committee A provides technical advice to the National Heart, Lung, and Blood Advisory Council and to the Director,

NHLBI, in areas relating to the fundamental processes and diseases of the heart and lungs. The committee also reviews program project grant applications, other grants-in-aid, and contract proposals for the support of programs of multidisciplinary basic and clinical research.

Membership*

Dr. Amir Askari (1984)
Medical College of Ohio

Dr. Vernon S. Bishop (1987)
University of Texas, San Antonio

Dr. Margaret E. Billingham (1986)
Stanford University

Dr. Joseph D. Brain (1984)
Harvard University

Dr. Kenneth L. Brigham (1985)
Vanderbilt University

Dr. Betty C. Corya (1984)
Indiana University

Dr. Darrel D. Fanestil (1986)
University of California, San Diego

Dr. David J. Hartshorne (1985)
University of Arizona

Dr. Aaron Janoff (1987)
State University of New York, Stony Brook

Dr. Arnold M. Katz (1984)
University of Connecticut Health Center

Dr. Matthew N. Levy (1987)
Mt. Sinai Medical Center, Cleveland

Dr. Joseph R. Rodarte (1986)
Mayo Foundation

Dr. Eugene M. Renkin (1987)
University of California, Davis

Dr. Annemarie Weber (1986)
University of Pennsylvania

Dr. Vallee L. Willman (1986)
St. Louis University

HEART, LUNG, AND BLOOD RESEARCH REVIEW COMMITTEE B

Chairman: Dr. Aram V. Chobanian, Boston University

Executive Secretary: Dr. Louis M. Ouellette, Review Branch, Division of Extramural Affairs, NHLBI, National Institutes of Health, Bethesda, Maryland 20205, (301) 496-7915

The Heart, Lung, and Blood Research Review Committee B provides technical advice to the National Heart, Lung, and Blood Advisory Council and to the Director, NHLBI, relating to the fundamental processes and diseases of blood vessels and blood and to blood banking and resources. The committee also reviews program project grant applications, other grants-in-aid, and contract proposals for the support of programs of multidisciplinary basic and clinical research.

Membership*

Dr. David F. Bohr (1984)

University of Michigan, Ann Arbor

Dr. Larry C. B. Chan (1986)

Baylor College of Medicine

Dr. Barry S. Coller (1984)

State University of New York, Stony Brook

Dr. David N. Fass (1987)

Mayo Medical School

Dr. Barbara C. Furie (1984)

Tufts University

Dr. Godfrey S. Getz (1987)

University of Chicago

Dr. Tadashi Inagami (1987)

Vanderbilt University

Dr. Henry C. McGill, Jr. (1986)

University of Texas, San Antonio

Dr. Michael W. Mosesson (1986)

Mount Sinai Medical Center, Milwaukee

Dr. Alexander V. Nichols (1984)

University of California, Berkeley

Dr. Suzanne Oparil (1986)

University of Alabama

Dr. Morton P. Printz (1985)

University of California, San Diego

Dr. Elias Schwartz (1985)

University of Pennsylvania

Dr. Stephen M. Schwartz (1985)

University of Washington

Dr. Linda L. Slakey (1987)

University of Massachusetts

RESEARCH MANPOWER REVIEW COMMITTEE

Chairman: Dr. Madison S. Spach, Duke University

Executive Secretary: Dr. John L. Fakunding, Review Branch, Division of Extramural Affairs, NHLBI, National Institutes of Health, Bethesda, Maryland 20205, (301) 496-7361

The Research Manpower Review Committee provides technical advice to the Directors, NIH and NHLBI, and to the National Heart, Lung, and Blood Advisory Council. The committee reviews projects for the support of research manpower training for the Transfusion Medicine Academic Award Program, the Preventive Cardiology Academic Program, the Clinical Investigator Award Program, the Physician Scientist Award Program, and the National Research Service Awards for Institutional Grants and proposals for conferences and workshops relating to research training and development.

Membership*

Dr. Mary Jo Burgess (1984)

University of Utah

Dr. Jacqueline J. Coalson (1986)

University of Texas, San Antonio

Dr. Russell F. Doolittle (1984)

University of California, San Diego

Dr. Carlos Vallbona (1984)

Baylor College of Medicine

Dr. Marjorie B. Zucker (1985)

New York University

* Current as of December 15, 1983.

Division of Intramural Research

BOARD OF SCIENTIFIC COUNSELORS

Chairman: Dr. Daniel Steinberg, University of California, San Diego

Executive Secretary: Dr. Jack Orloff, Director, Division of Intramural Research, NHLBI, National Institutes of Health, Bethesda, Maryland 20205, (301) 496-2116

The Board of Scientific Counselors advises the Directors, NIH and NHLBI, and the Director, Division of Intramural Research, on the intramural research programs at the NHLBI.

Membership*

Dr. Arthur Bank (1987)
Columbia University

Dr. Alfred G. Gilman (1986)
University of Texas Health Science Center

Dr. Mary E. Jones (1984)
University of North Carolina, Chapel Hill

Dr. Francis H. Ruddle (1984)
Yale University

Dr. Burton E. Sobel (1985)
Washington University

* Current as of December 15, 1983.

8. FISCAL YEAR 1983 BUDGET OVERVIEW

NHLBI Obligations by Budget Mechanism, Fiscal Year 1983

BUDGET MECHANISM	OBLIGATED DOLLARS FY 1983*	PERCENT OF TOTAL NHLBI FY 1983 BUDGET
Research Project Grants†	\$356,804,824	57.2
Specialized Centers of Research (SCOR's)	52,672,347	8.4
Sickle Cell Centers	12,829,206	2.0
Other Research Grants	27,677,106	4.4
Research Career Programs	(14,170,031)	(2.3)
Training Programs	26,570,124	4.3
Research and Development Contracts	60,441,041	9.7
Intramural Laboratory and Clinical Research‡	52,413,038	8.4
Direct Operations and Program Management **	34,851,837	5.6
Total, NHLBI	\$624,259,523	100.0

* Includes Reimbursements.

† Includes \$1,145,190 for Small Business Innovation Research (SBIR)—a new program in 1983.

‡ Includes Intramural Research Contracts.

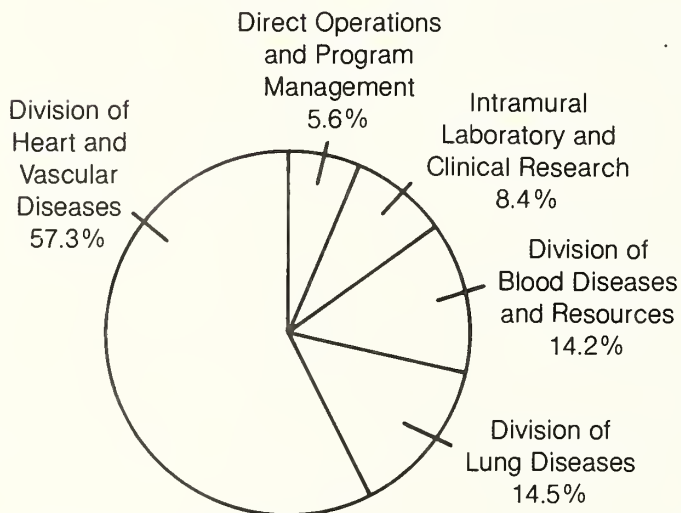
** Includes OD, NHLBI, Research Contracts.

NHLBI Obligations by Budget Activity, Fiscal Year 1983

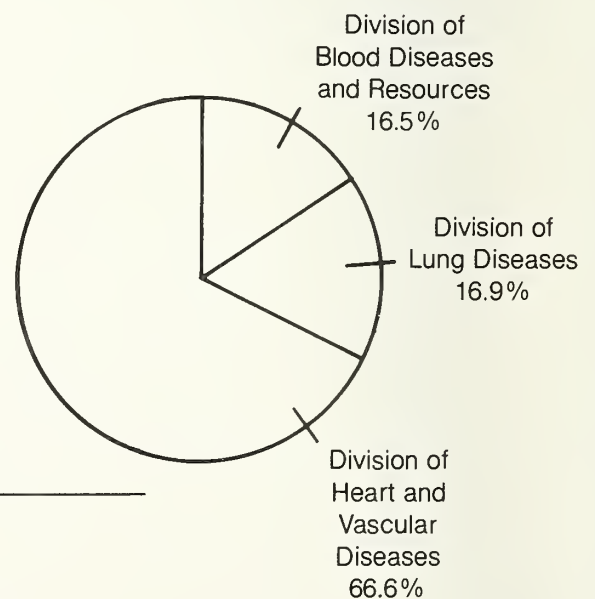
Extramural Obligations by Division Activities, Fiscal Year 1983

DIVISION	OBLIGATED DOLLARS FY 1983	PERCENT OF NHLBI EXTRAMURAL FY 1983 BUDGET
Division of Heart and Vascular Diseases (DHVD)	\$357,591,252	66.6
Division of Lung Diseases (DLD)	90,775,549	16.9
Division of Blood Diseases and Resources (DBDR)	88,627,847	16.5
Total, Extramural Obligations	\$536,994,648	100.0

Total NHLBI Obligations



Extramural Obligations



For detailed data on fiscal year 1983

- research grants, see Chapter 10;
- research and development contracts, see Chapter 11;
- research training and career development, see Chapter 12; and
- distribution of grants, contracts, and training funding, see Chapter 13.

Division of Heart and Vascular Diseases (DHVD)
Obligations by Budget Mechanism, Fiscal Year 1983

BUDGET MECHANISM	OBLIGATED DOLLARS	PERCENT OF DHVD BUDGET
Research Project Grants	\$236,521,250	66.1
Specialized Centers of Research	32,748,586	9.2
Other Research Grants	18,452,230	5.2
Research Career Programs	(8,132,452)	(2.3)
Training Programs	17,835,566	5.0
Research and Development Contracts	52,033,620	14.5
Total, DHVD	\$357,591,252	100.0

Division of Lung Diseases (DLD)
Obligations by Budget Mechanism, Fiscal Year 1983

BUDGET MECHANISM	OBLIGATED DOLLARS	PERCENT OF DLD BUDGET
Research Project Grants	\$62,270,998	68.6
Specialized Centers of Research	14,406,725	15.9
Other Research Grants	6,265,001	6.9
Research Career Programs	(4,302,084)	(4.7)
Training Programs	4,657,142	5.1
Research and Development Contracts	3,175,683	3.5
Total, DLD	\$90,775,549	100.0

Division of Blood Diseases and Resources (DBDR)
Obligations by Budget Mechanism, Fiscal Year 1983

BUDGET MECHANISM	OBLIGATED DOLLARS	PERCENT OF DBDR BUDGET
Research Project Grants	\$58,012,576	65.5
Specialized Centers of Research	5,517,036	6.2
Sickle Cell Centers	12,829,206	14.5
Other Research Grants	2,959,875	3.3
Research Career Programs	(1,735,495)	(2.0)
Training Programs	4,077,416	4.6
Research and Development Contracts	5,231,738	5.9
Total, DBDR	\$88,627,847	100.0

9. LONG-TERM TRENDS

Budget History of the NHLBI: Fiscal Years 1950-1984 (Dollars in Thousands)

FISCAL YEAR	BUDGET ESTIMATE TO CONGRESS	HOUSE ALLOWANCE	SENATE ALLOWANCE	APPROPRIATION	OBLIGATIONS	CUMULATIVE FISCAL YEAR OBLIGATIONS
1950	\$ 4,630	\$ 11,575	\$ 29,117	\$ 16,075	\$ 15,768	\$ 15,768
1951	8,800	8,800	9,400	9,400	8,497	24,265
1952	10,237	10,074	10,156	10,083	9,850	34,115
1953	9,779	9,623	12,000	12,000	11,398	45,513
1954	11,040	12,000	15,418	15,168	14,952	60,465
1955	14,570	16,168	17,168	16,668	16,595	77,060
1956	17,454	17,398	23,976	18,808	18,838	95,898
1957	22,106	25,106	33,396	33,396	32,392	128,290
1958	33,436	33,436	38,784	35,936	35,973	164,263
1959	34,820	36,212	49,529	45,613	45,468	209,731
1960	45,594	52,744	89,500	62,237	61,565	271,296
1961	63,162	71,762	125,166	86,900	86,239	357,535
1962	97,073	105,723	160,000	132,912	110,849	468,384
1963	126,898	143,398	149,498	147,398	120,597	588,981
1964	130,108	129,325	130,545	132,404	117,551	706,532
1965	125,640	124,521	125,171	124,824	124,412	830,944
1966	141,412	146,212	143,462	141,462	141,171	972,115
1967	148,407	154,770	164,770	164,770	164,342	1,136,457
1968	167,954	167,954	177,954	167,954	162,134	1,298,591
1969	169,735	164,120	172,120	166,928	161,834	1,460,425
1970	160,513	160,513	182,000	171,257	160,433	1,620,858
1971	171,747	178,479	203,479	194,901	194,826	1,815,684
1972	195,492	211,624	252,590	232,627	232,577	2,048,261
1973	255,280	300,000	350,000	300,000	255,722	2,303,983
1974	265,000	281,415	320,000	302,915 ¹	327,270 ²	2,631,253
1975	309,299	321,196	330,000	327,996 ³	327,953 ³	2,959,206
1976	324,934	329,079 ⁴	379,059 ⁴	370,096 ⁵	368,648	3,327,854
TQ ⁶	59,715	58,015	58,015	58,763	60,639 ⁷	3,388,493
1977	342,855	380,661	420,661	396,661	396,857 ⁸	3,785,350
1978	403,642	432,642	456,000	447,901	447,968 ⁸	4,233,318
1979	454,336	485,584 ⁴	485,584 ⁴	510,134 ⁹	510,080	4,743,398
1980	507,344	527,544	527,544	527,544	527,248	5,270,646
1981	532,799	560,264	565,264	549,693	550,072 ⁸	5,820,718
1982	579,602	583,831	587,741	559,637	559,800 ⁸	6,380,518
1983	577,143	620,947	624,542	624,259	624,260 ⁸	7,004,778
1984	639,774	665,859 ⁴	683,489 ⁴	703,197 ¹⁰		

¹ The appropriation was reduced by a provision whereby up to 5% of any activity could be withheld. The adjusted appropriation for fiscal year 1974 was \$289,550,000. This was reduced by transfers to \$286,465,000.

² Includes \$40,990,000 obligated in fiscal year 1974 from released fiscal year 1973 funds previously impounded.

³ Includes \$3,226,907 from released fiscal year 1973 funds previously impounded.

⁴ Excludes Training and Fellowship Programs.

⁵ Includes \$20,954,000 continuing resolution for Training and Fellowship Programs.

⁶ TQ = Transition Quarter, July 1-September 30, 1976.

⁷ Exceeds appropriation due to carryover of unobligated balance from fiscal year 1976.

⁸ Exceeds appropriation due to collection of outside reimbursements.

⁹ Includes \$21,293,000 for Training and Fellowship Programs. Reflects a transfer of \$393,000 to OD/NIH for payraise costs.

¹⁰ Includes \$28,523,000 continuing resolution for Training and Fellowship Programs.

Obligations and Employment, Fiscal Years 1974-1983

FISCAL YEAR	OBLIGATIONS	STAFF*
1974	326.3	692
1975	327.9	691
1976	368.6	749
1977	396.9	723
1978	448.0	770
1979	506.3	736
1980	527.2	735
1981	550.1	663†
1982	559.8	639‡
1983	624.3	639

* Full-time permanent employees as of the end of each fiscal year.

† Sixty-five positions were reclassified "other than permanent" full-time.

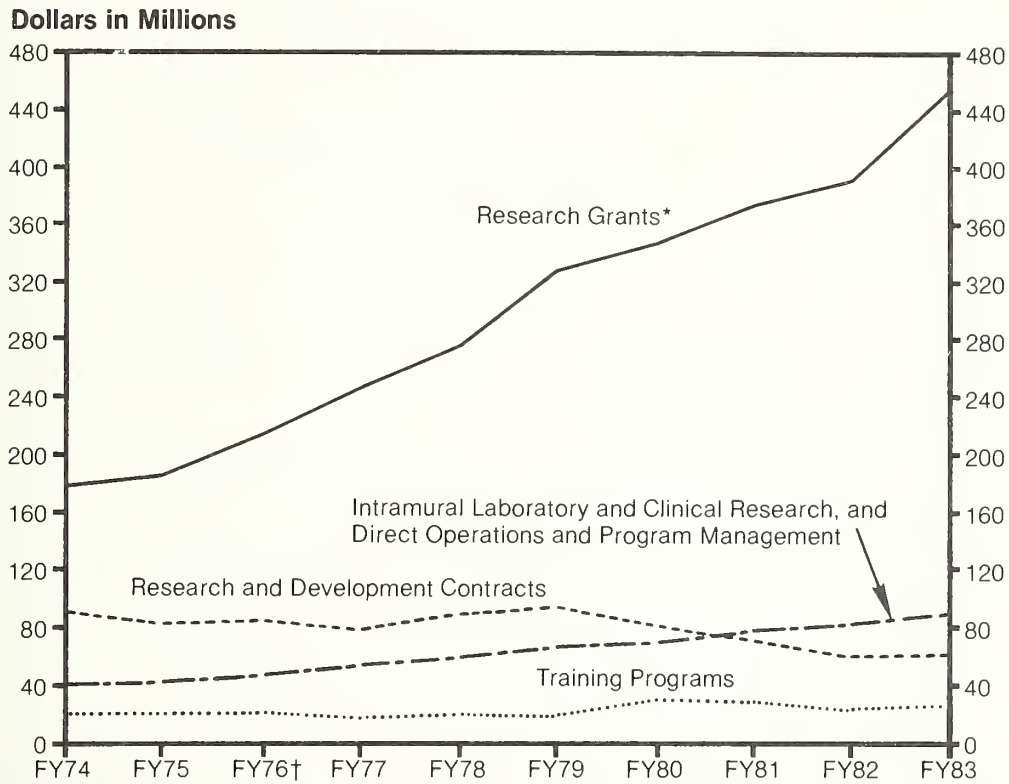
‡ Twenty positions were reclassified "other than permanent" full-time.

NHLBI Obligations by Budget Mechanism: Fiscal Years 1974-1983

BUDGET MECHANISM	FY 1974	FY 1975	FY 1976*	FY 1977	FY 1978	FY 1979	FY 1980	FY 1981	FY 1982	FY 1983
Research Grants	\$179.5	\$183.7	\$216.4	\$242.6	\$276.5	\$326.3	\$346.4	\$374.2	\$396.8	\$450.0
Research and Development Contracts	88.7	80.9	82.6	80.0	88.7	96.9	78.0	68.6	57.5	60.4
Training Programs	19.4	20.0	20.5	17.1	21.2	21.3	32.0	31.5	23.6	26.6
Intramural Laboratory and Clinical Research, and Direct Operations and Program Management	38.7	43.3	49.1	57.2	61.6	65.6	70.8	75.8	81.9	87.3
Total, NHLBI	\$326.3	\$327.9	\$368.6	\$396.9	\$448.0	\$510.1	\$527.2	\$550.1	\$559.8	\$624.3

* Excludes Transition Quarter.

History of NHLBI Obligations by Budget Mechanism: Fiscal Years 1974-1983

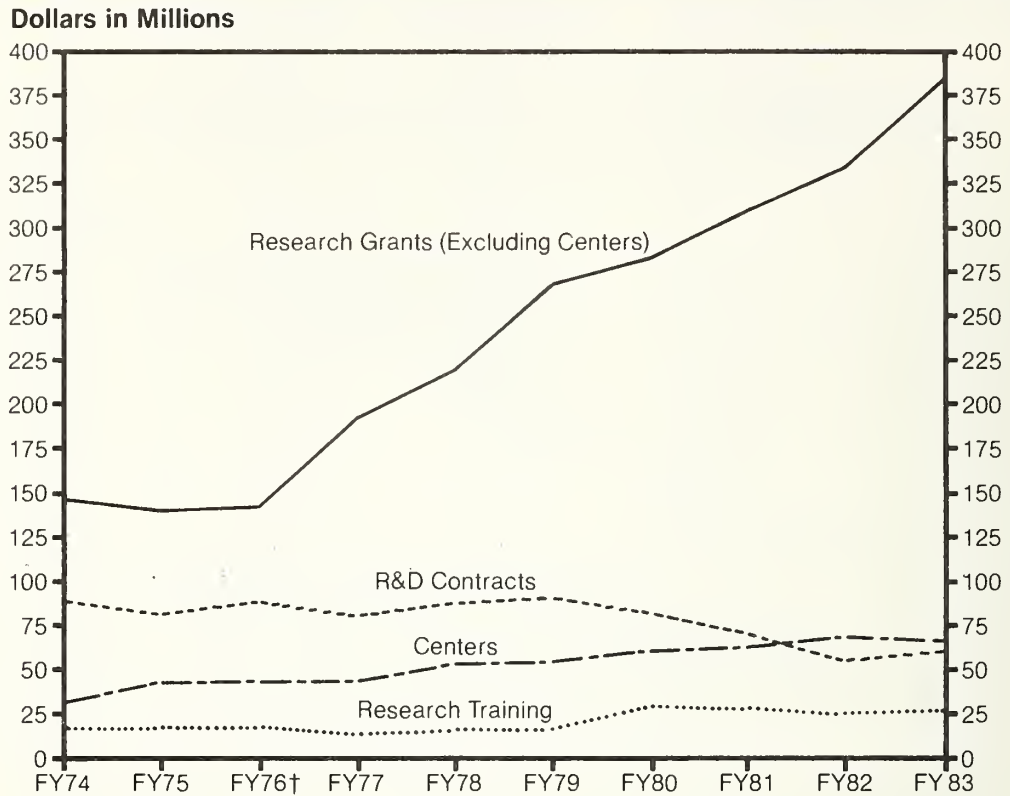


* Includes Research Career Programs; excludes General Research Support Grants, FY 1974.

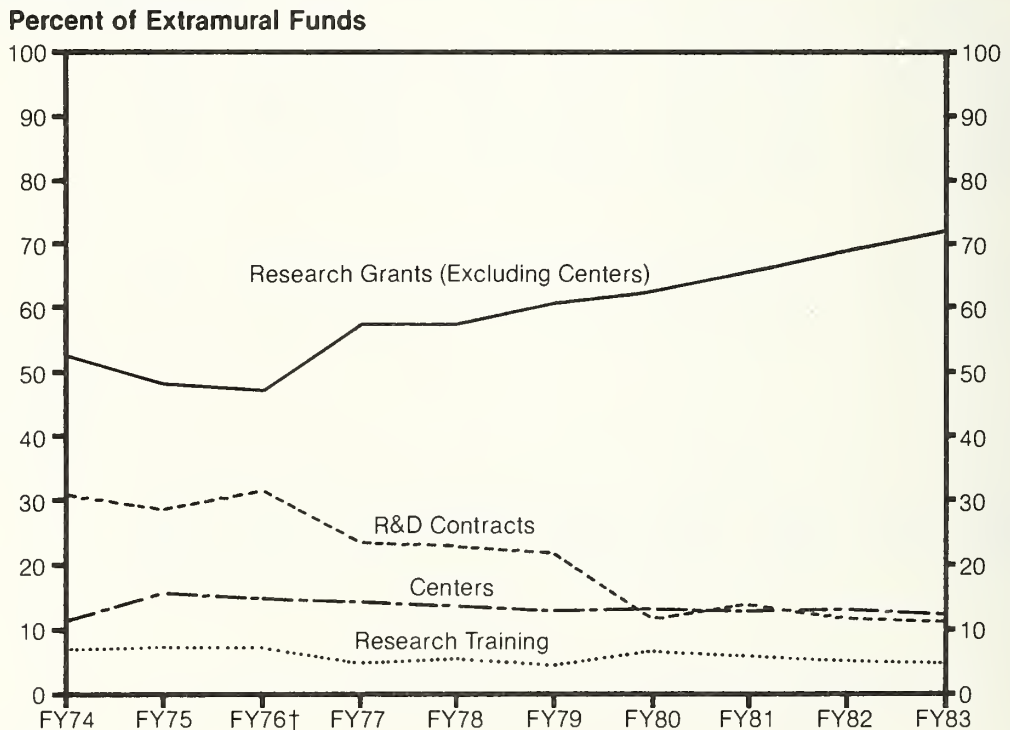
† Excludes Transition Quarter.

Trends in Extramural Research Funding: NHLBI Fiscal Years 1974-1983

Research Grants,* Centers, Research and Development Contracts, and Research Training (Dollars Funded)



Research Grants,* Centers, Research and Development Contracts, and Research Training (Percentage Trends)



* Includes Research Career Programs.

† Excludes Transition Quarter.

NHLBI Obligations *

Current Dollars (Millions): Fiscal Years 1974-1983†

	FY 1974	FY 1975	FY 1976‡	FY 1977	FY 1978	FY 1979	FY 1980	FY 1981	FY 1982	FY 1983	Increase 1974-1983
Heart	\$191.8	\$189.4	\$215.6**	\$227.5	\$259.9	\$294.9	\$308.7	\$318.3	\$321.4	\$357.6	+ \$165.8
Lung	44.7	44.6	51.3	54.8	63.4	73.8	75.3	79.2	79.9	90.8	+ 46.1
Blood	51.1	50.6	52.6**	57.4	63.1	75.8	72.4††	76.8	76.6	88.6	+ 37.5
DIR	21.6	25.7	29.3	33.5	36.0	38.1	39.6	42.7	47.6	52.4	+ 30.8
DOPM	17.1	17.6	19.8	23.7	25.6	27.5	31.2	33.1	34.3	34.9	+ 17.8
Total	\$326.3	\$327.9	\$368.6	\$369.9	\$448.0	\$510.1	\$527.2	\$550.1	\$559.8	\$624.3	+ \$298.0

Constant Dollars (Millions): Fiscal Years 1974-1983†

	FY 1974	FY 1975	FY 1976‡	FY 1977	FY 1978	FY 1979	FY 1980	FY 1981	FY 1982	FY 1983	Increase 1974-1983
Heart	\$191.8	\$171.1	\$181.3	\$177.1	\$188.3	\$197.4	\$189.4	\$177.1	\$166.4	\$177.1	-\$14.7
Lung	44.7	40.3	43.1	42.7	45.9	49.4	46.2	44.1	41.4	45.0	+ 0.3
Blood	51.1	45.7	44.2	44.7	45.7	50.8	44.4	42.7	39.7	43.9	- 7.2
DIR	21.6	23.2	24.6	26.1	26.1	25.5	24.3	23.8	24.6	25.9	+ 4.3
DOPM	17.1	15.9	16.7	18.4	18.6	18.4	19.2	18.4	17.7	17.3	+ 0.2
Total	\$326.3	\$296.2	\$309.9	\$309.9	\$324.6	\$341.5	\$323.5	\$306.1	\$289.8	\$309.2	-\$17.1

This table is based on the biomedical R&D price index.

Budget Categories (Percent): Fiscal Years 1974-1983†

	FY 1974	FY 1975	FY 1976‡	FY 1977	FY 1978	FY 1979	FY 1980	FY 1981	FY 1982	FY 1983	Percent Increase 1974-1983	
											Current	Constant
Heart	58.7	57.8	58.5**	57.3	58.0	57.8	58.9	57.9	57.4	57.3	+ 86.4	- 7.7
Lung	13.7	13.6	13.9	13.8	14.2	14.5	14.3	14.4	14.3	14.5	+ 103.1	+ 0.7
Blood	15.7	15.4	14.2**	14.5	14.1	14.8	13.7††	13.9	13.7	14.2	+ 73.4	- 14.1
DIR	6.6	7.8	8.0	8.4	8.0	7.5	7.5	7.8	8.5	8.4	+ 142.3	+ 19.9
DOPM	5.3	5.4	5.4	6.0	5.7	5.4	5.9	6.0	6.1	5.6	+ 104.1	+ 1.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	+ 91.3	- 5.2

* Excludes General Research Support Grants FY 1974 = \$1.1 million.

† Scientific evaluation grants included in Division data.

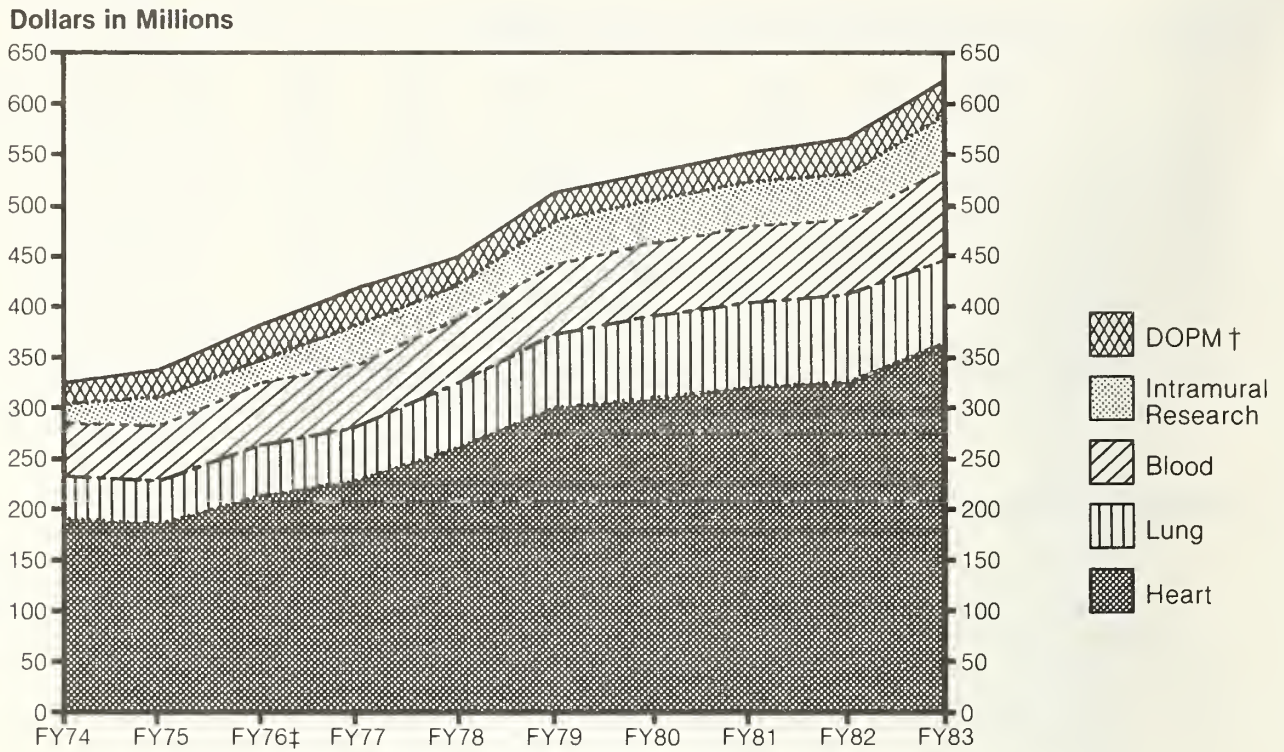
‡ Excludes Transition Quarter.

** Biomaterials moved to DHVD from DBDR (\$3.5 million).

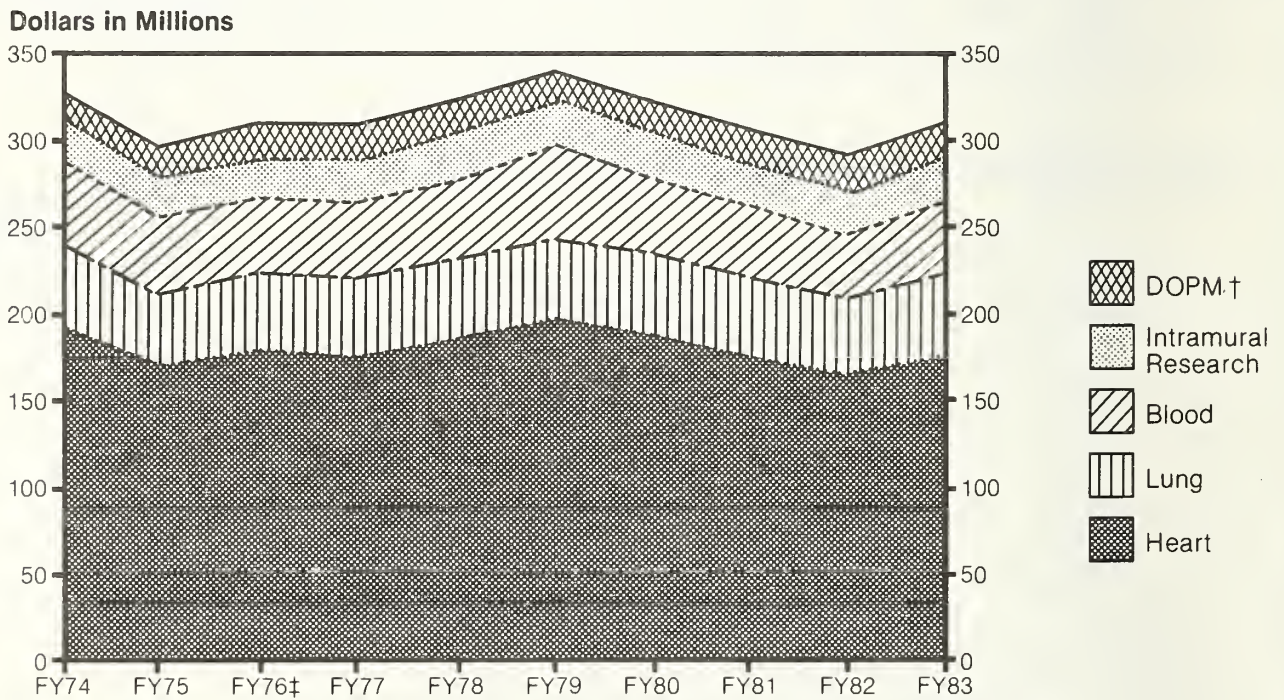
†† Funds for the Sickle Cell Clinics (\$3.75 million) were appropriated to HSA beginning in FY 1980.

NHLBI Obligations:* Fiscal Years 1974-1983

Current Dollars

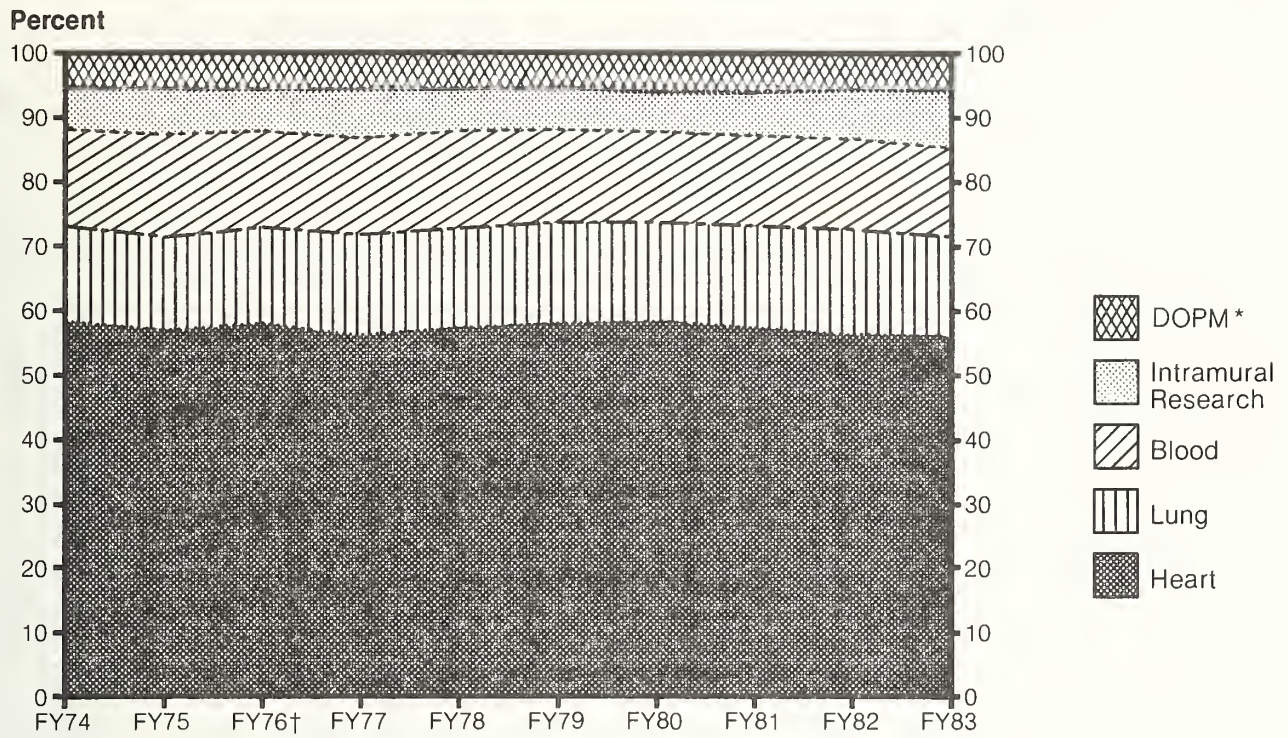


Constant 1974 Dollars



* Excludes General Research Grants FY 1974.
 † DOPM = Direct Operations and Program Management.
 ‡ Excludes Transition Quarter.

Percentage Trends for Budget Categories



* DOPM = Direct Operations and Program Management.

† Excludes Transition Quarter.

NHLBI Extramural Programs: Fiscal Years 1974-1983

(Dollars in Millions)

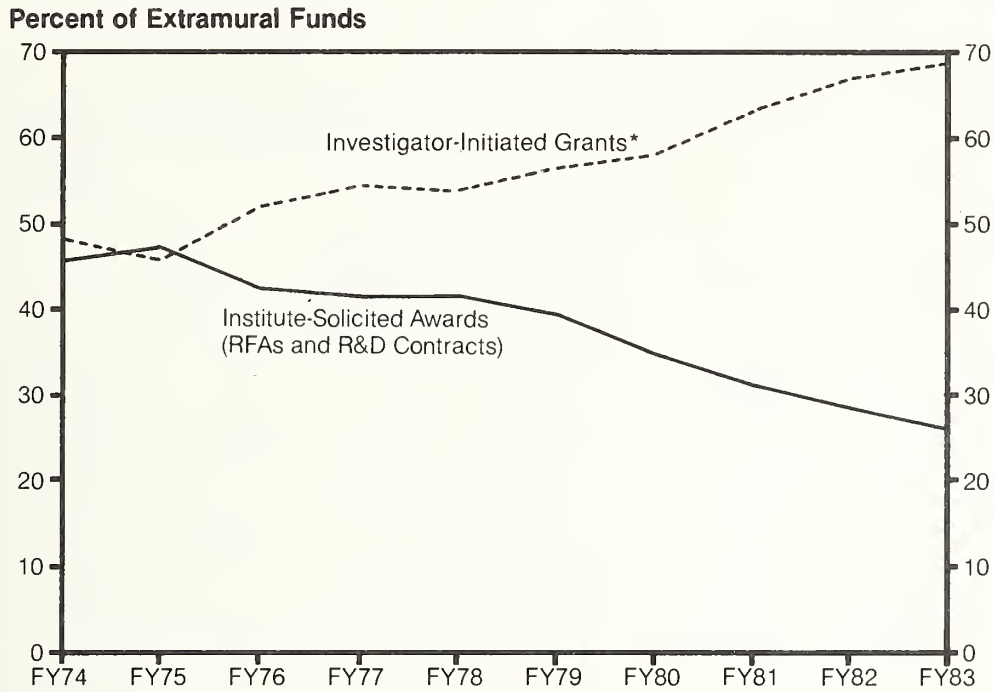
	FY 1974	FY 1975	FY 1976	FY 1977	FY 1978	FY 1979	FY 1980	FY 1981	FY 1982	FY 1983
Investigator-Initiated Awards										
Investigator-Initiated Grants	\$133.5	\$126.0	\$161.3	\$177.4	\$197.9	\$238.8	\$255.6	\$284.3	\$305.9	\$356.4
Research Career Programs	4.2	4.8	5.5	6.4	8.7	9.5	11.3	12.7	13.3	14.2
Subtotal	(137.7)	(130.8)	(166.8)	(183.8)	(206.6)	(248.3)	(266.9)	(297.0)	(319.2)	(370.6)
Institute-Initiated Awards										
RFAs (including Centers)	41.8	52.4	49.0	57.6	68.3	76.8	78.1	75.2	77.6	79.4
R&D Contracts	88.7	80.9	82.6	80.0	88.7	96.9	78.0	68.6	57.5	60.4
Subtotal	(130.5)	(133.3)	(131.6)	(137.6)	(157.0)	(173.7)	(156.1)	(143.8)	(135.1)	(139.8)
Training	19.4	20.0	20.6	17.1	21.2	21.3	32.0	31.5	23.6	26.6
Total Extramural*	\$287.3	\$284.1	\$319.0	\$338.5	\$384.8	\$443.3	\$455.0	\$472.3	\$477.9	\$537.0

(As Percent of Total Extramural Funds)

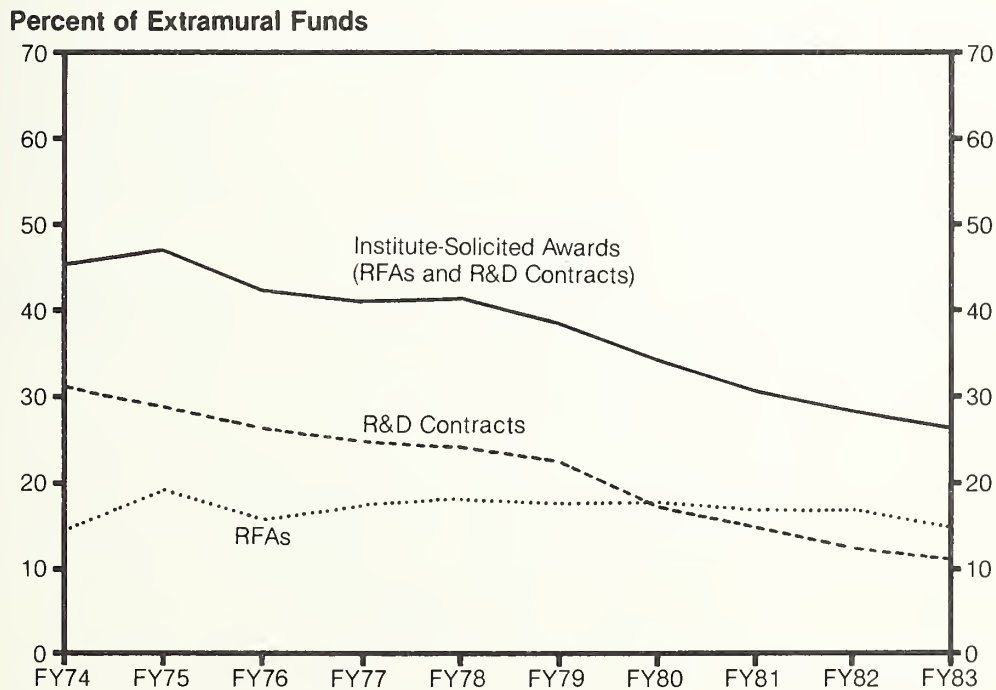
	FY 1974	FY 1975	FY 1976	FY 1977	FY 1978	FY 1979	FY 1980	FY 1981	FY 1982	FY 1983
Investigator-Initiated Awards										
Investigator-Initiated Grants	46.4%	44.4%	50.6%	52.4%	51.4%	53.9%	56.2%	60.2%	64.0%	66.4%
Research Career Programs	1.5	1.7	1.7	1.9	2.3	2.1	2.5	2.7	2.8	2.6
Subtotal	(47.9)	(46.1)	(52.3)	(54.3)	(53.7)	(56.0)	(58.7)	(62.9)	(66.8)	(69.0)
Institute-Initiated Awards										
RFAs (including Centers)	14.5	18.4	15.4	17.0	17.7	17.3	17.2	15.9	16.2	14.8
R&D Contracts	30.8	28.5	25.9	23.6	23.1	21.9	17.1	14.5	12.0	11.2
Subtotal	(45.3)	(46.9)	(41.3)	(40.6)	(40.8)	(39.2)	(34.3)	(30.4)	(28.2)	(26.0)
Training	6.8	7.0	6.4	5.1	5.5	4.8	7.0	6.7	5.0	5.0
Total*	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

* Excludes Scientific Evaluation Grants.

Comparison of Institute-Solicited vs. Investigator-Initiated Awards: Fiscal Years 1974-1983



Comparison of Contracts and RFA's as Subsets of Institute-Solicited Awards: Fiscal Years 1974-1983



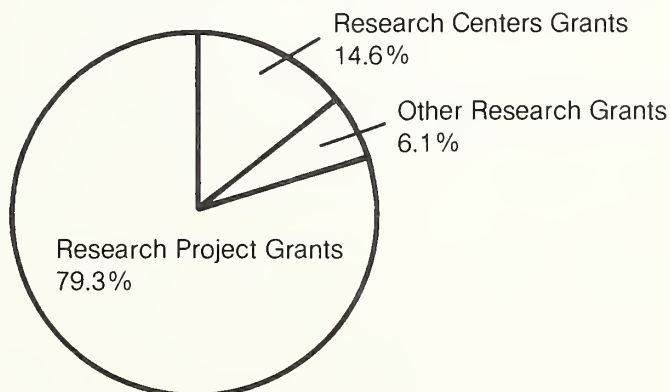
* Includes Research Career Programs.

Note: RFA = Request for Application.

10. RESEARCH GRANTS*

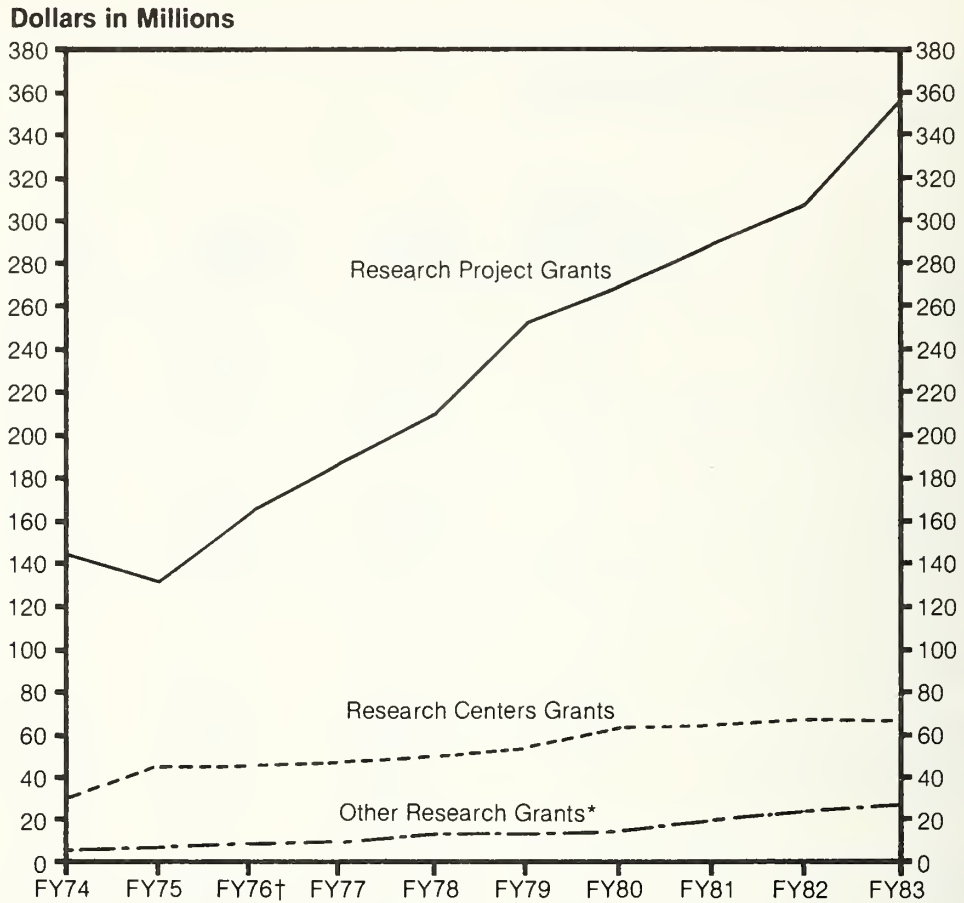
NHLBI Research Grants by Activity: Fiscal Year 1983

	NUMBER OF GRANTS OBLIGATED	DIRECT COST	INDIRECT COST	TOTAL COST	PERCENT OF TOTAL NHLBI RESEARCH GRANT DOLLARS
Research Projects					
Regular Research Grants (R01)	2,063	\$171,767,643	\$ 78,036,643	\$249,804,286	55.5
Program Project Grants (P01)	110	64,637,179	29,326,887	93,964,066	20.9
New Investigator Awards (R23)	242	8,128,020	3,763,262	11,891,282	2.6
Small Business Innovative Research (R43)	22	763,545	381,645	1,145,190	0.3
Subtotal, Research Project Grants	2,437	245,296,387	111,508,437	356,804,824	79.3
Research Centers					
Specialized Centers of Research (SCORs)	46	36,517,449	16,154,898	52,672,347	11.7
Sickle Cell Centers (P60)	10	9,458,797	3,370,409	12,829,206	2.9
Subtotal, Research Center Grants	56	45,976,246	19,525,307	65,501,553	14.6
Other Research					
Special Research Career Awards: Diabetes Mellitus (K01)	3	141,679	11,349	153,028	—
Research Career Development Awards (K04)	137	4,905,454	393,021	5,298,475	1.2
Research Career Awards (K06)	18	531,764	42,522	574,286	0.1
Preventive Cardiology Awards (K07)	26	1,944,308	159,985	2,104,293	0.4
Pulmonary Academic Awards (K07)	21	947,881	77,024	1,024,905	0.2
Transfusion Medicine Academic Awards (K07)	5	262,461	20,997	283,458	0.1
Pulmonary Faculty Training Awards (K08)	8	236,666	16,710	253,376	0.1
Clinical Investigator Awards (K08)	96	4,151,619	326,591	4,478,210	1.0
Subtotal, Research Career Programs	314	13,121,832	1,048,199	14,170,031	3.1
Cooperative Clinical Research (R10)	3	2,864,844	615,923	3,480,767	0.8
Minority Biomedical Support (S06) Demonstration and Education Program (R18)	(28)	1,508,791	549,219	2,058,010	0.5
Other (R09, P09, R13, T15)	21	3,636,994	1,766,780	5,403,774	1.2
Other (R09, P09, R13, T15)	27	2,564,524	—	2,564,524	0.6
Subtotal, Other Research Grants	365	23,696,985	3,980,121	27,677,106	6.1
Total, NHLBI Research Grants	2,858	\$314,969,618	\$135,013,865	\$449,983,483	100.0



* For descriptions of grants see page 115.

Research Project Grants, Research Centers Grants, and Other Research Grants: Obligations for Fiscal Years 1974-1983



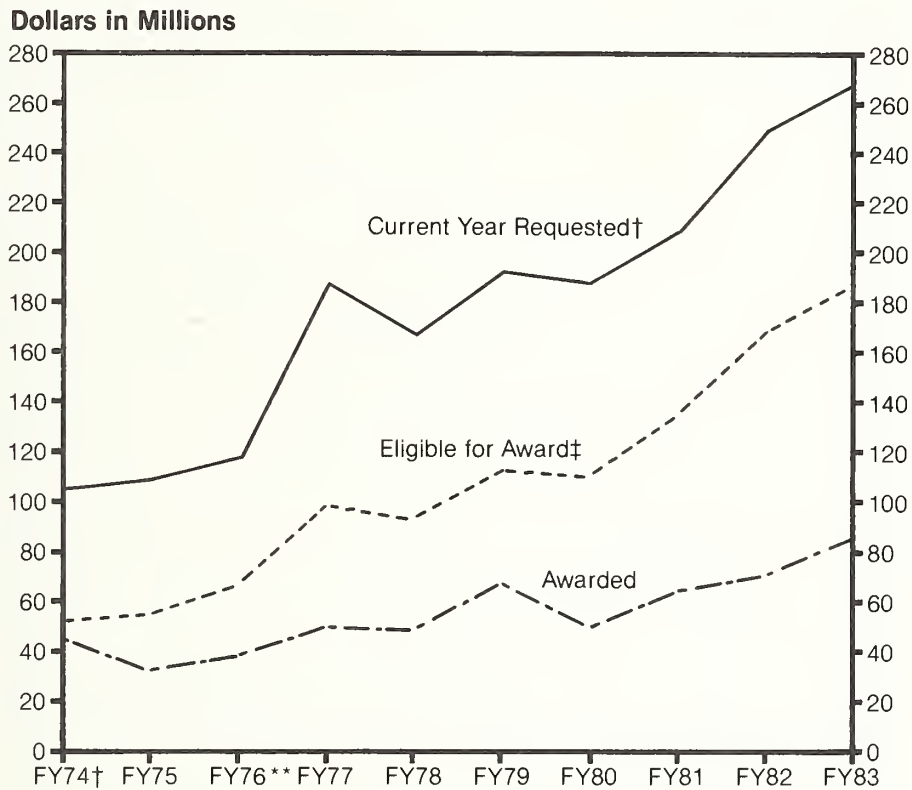
(Dollars in Thousands)

	FY 1974	FY 1975	FY 1976†	FY 1977	FY 1978	FY 1979	FY 1980	FY 1981	FY 1982	FY 1983
Research Project Grants	\$142,825	\$132,032	\$163,540	\$187,365	\$207,344	\$253,478	\$266,896	\$289,051	\$305,032	\$356,805
Research Centers Grants	31,206	44,744	44,481	46,022	53,152	57,831	62,306	63,604	66,663	65,502
Other Research Grants*	5,522	6,975	8,401	9,217	15,991	15,013	17,308	21,686	25,022	27,677
Total	\$179,553	\$183,751	\$216,422	\$242,604	\$276,487	\$326,322	\$346,510	\$374,341	\$396,717	\$449,984

* Includes Research Career Programs; excludes General Research Support Grants, FY 1974.

† Excludes Transition Quarter.

Regular Research Grant* Applications, Approvals, and Awards: Direct Cost for Fiscal Years 1974-1983



(Dollars in Millions)

	FY 1974†	FY 1975	FY 1976**	FY 1977	FY 1978	FY 1979	FY 1980	FY 1981	FY 1982	FY 1983
Current Year Requested	\$104.9	\$108.5	\$118.5	\$186.5	\$163.9	\$192.3	\$187.4	\$208.0	\$248.0	\$266.3
Current Year Approved	52.2	55.6	61.9	98.5	90.8	106.9	114.4	135.2	169.5	186.1
Total Eligible for Award‡	53.4	55.7	67.0	98.6	93.8	117.4	114.8	135.6	169.7	186.4
Awarded	43.6	33.9	38.6	49.7	49.0	65.4	49.3	62.4	70.7	82.7

* Includes R01, R23, P01, R43 grants (R43 grants beginning in Fiscal Year 1983).

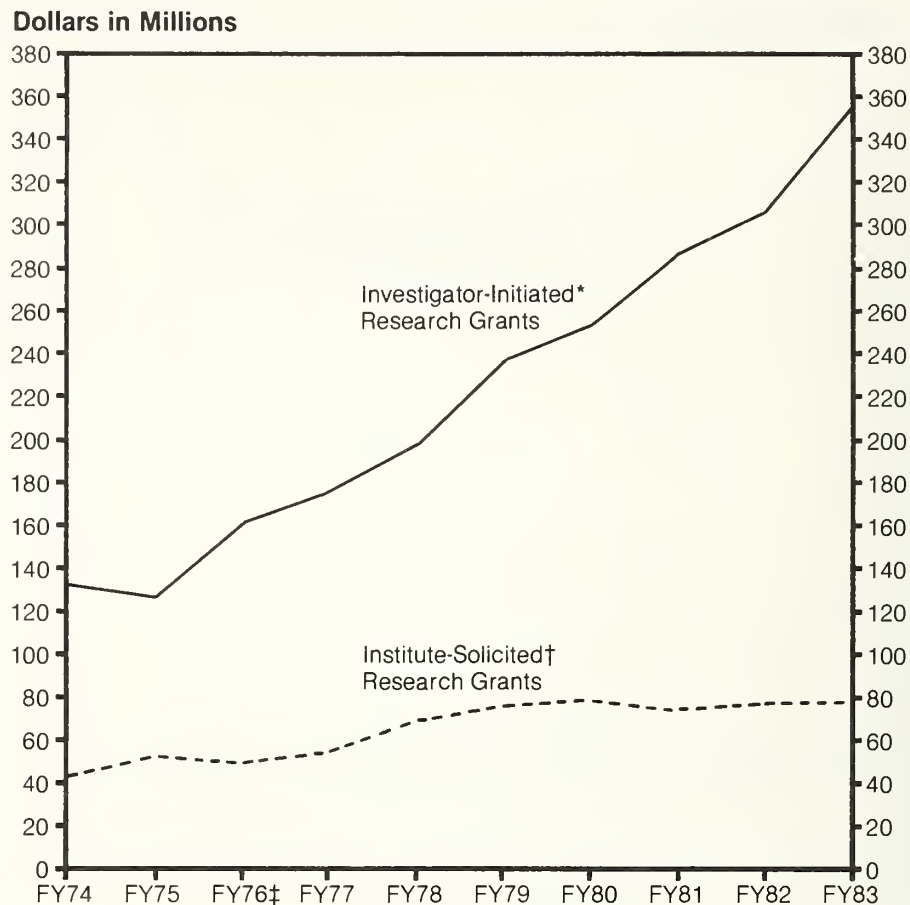
† Reflects release of fiscal year 1973 impounded funds.

‡ Includes unfunded approvals carried over from previous years that are funded within a specific year.

** Excludes Transition Quarter.

Source of Data: Division of Research Grants, NIH.

Investigator-Initiated vs. Institute-Solicited Research Grants: Total Obligations for Fiscal Years 1974-1983



(Dollars in Millions)

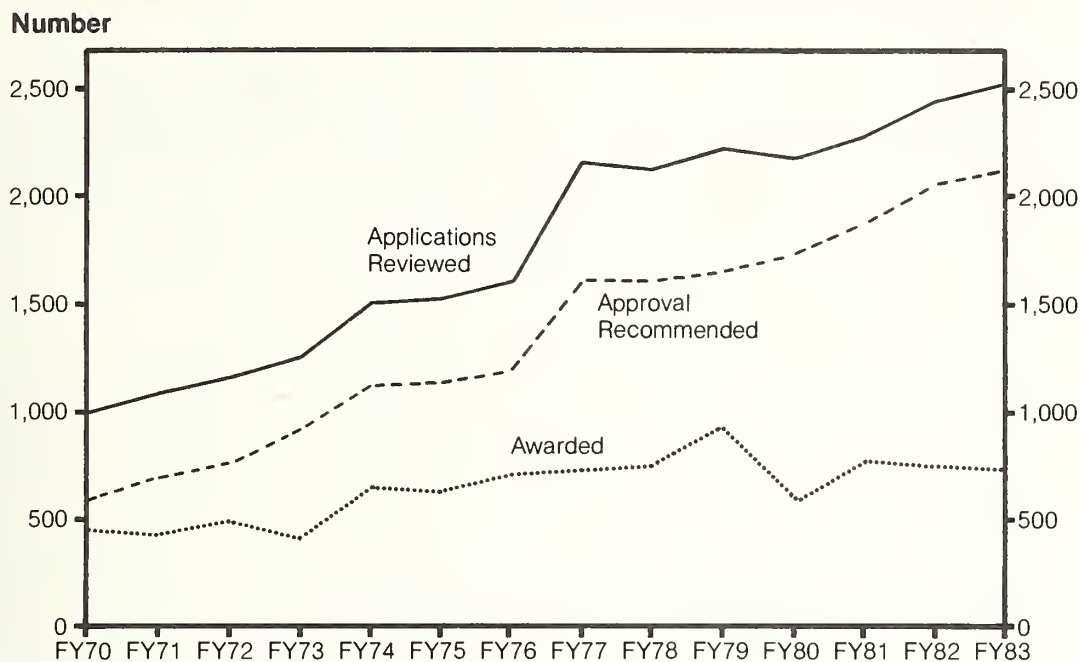
	FY 1974	FY 1975	FY 1976‡	FY 1977	FY 1978	FY 1979	FY 1980	FY 1981	FY 1982	FY 1983
Investigator-Initiated*	\$133.5	\$126.0	\$161.3	\$177.3	\$197.9	\$238.8	\$255.6	\$284.3	\$305.9	\$356.4
Institute-Solicited†	41.8	52.4	49.0	57.6	68.3	76.8	78.1	75.2	77.6	79.4
Total	\$175.3	\$178.4	\$210.3	\$234.9	\$266.2	\$315.6	\$333.7	\$359.5	\$383.5	\$435.8

* Includes Regular Research Grants, Program Project Grants, New Investigator Awards, Small Business Innovation Research Grants, and Research Career Programs; excludes General Research Support Grants, FY 1974.

† Includes Centers and Requests for Applications (RFAs).

‡ Excludes Transition Quarter.

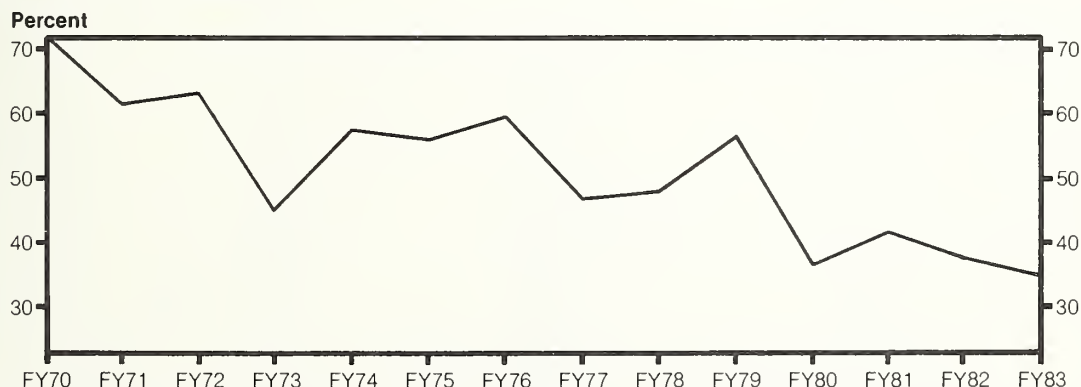
NHLBI Competing Research Project Grants:* Applications Reviewed, Approval Recommended, and Awarded, Fiscal Years 1970-1983



NUMBER OF GRANTS

	FY 1972	FY 1973	FY 1974†	FY 1975	FY 1976	FY 1977	FY 1978	FY 1979	FY 1980	FY 1981	FY 1982	FY 1983
Current Year Applications Reviewed	1,167	1,279	1,501	1,531	1,615	2,180	2,129	2,239	2,190	2,289	2,455	2,519
Current Year Approvals Recommended	773	933	1,117	1,137	1,192	1,600	1,595	1,679	1,735	1,890	2,054	2,110
Total Eligible‡	777	937	1,155	1,141	1,195	1,602	1,625	1,699	1,741	1,897	2,055	2,114
Awards	492	426	662	629	707	729	759	942	589	774	765	748
Percent Funded	63%	45%	59%	57%	59%	46%	47%	55%	34%	41%	37%	35%

NHLBI Competing Research Project Grants: Percent Funded, Fiscal Years 1970-1983



* Includes Research Project Grants, New Investigator Awards, Research Program Projects, and Small Business Innovation Research Grants, which began in fiscal year 1983.

† Reflects release of fiscal year 1973 impounded funds.

‡ Includes unfunded approvals carried over from previous years which were funded within a specific year.

Source: Division of Research Grants, NIH.

NHLBI Research Project Grants (R01, P01, R23, R43):*
Amount Funded, Fiscal Years 1974-1983
(Dollars in Millions)

FISCAL YEAR	TOTAL		COMPETING			
	NONCOMPETING AND COMPETING	NONCOMPETING	TOTAL	NEW COMPETING	RENEWAL COMPETING	COMPETING SUPPLEMENTS
1974	\$137.8	\$ 80.5	\$57.3	\$30.5	\$24.4	\$2.4
1975	132.5	87.7	44.8	26.0	17.2	1.6
1976†	164.6	113.5	51.1	30.7	18.9	1.5
1977	190.1	125.3	64.8	33.7	27.1	4.0
1978	209.1	141.6	67.5	33.4	32.2	1.9
1979	253.5	164.7	88.8	47.7	39.4	1.7
1980	266.9	200.4	66.5	33.1	30.8	2.6
1981	289.1	202.6	86.5	40.2	43.5	2.8
1982	305.0	205.3	99.7	44.9	52.9	1.9
1983	356.8	239.8	117.0	57.0	57.8	2.2

* R01 = Research Project Grants, P01 = Research Program Project Grants, R23 = New Investigator Research Grants, R43 = Small Business Innovative Research Grants (beginning in fiscal year 1983, \$1.1 million).

† Excludes Transition Quarter.

Growth of Indirect Cost Rates of Research Project Grants:*
Fiscal Years 1966-1983
(Dollars in Thousands)

FISCAL YEAR	DIRECT COST	INDIRECT COST	INDIRECT COST AS A PERCENT OF DIRECT COST	TOTAL COST
1966	\$ 74,928	\$ 13,051	17.4	\$ 87,979
1967	81,389	15,673	19.3	97,062
1968	77,892	17,019	21.8	94,911
1969	72,128	18,007	25.0	90,135
1970	68,467	17,986	26.3	86,453
1971	72,021	20,021	27.8	92,042
1972	81,350	25,035	30.8	106,385
1973	86,540	27,674	32.0	114,214
1974	109,692	37,798	34.5	147,490
1975	97,205	34,828	35.8	132,033
1976†	120,339	43,201	35.9	163,540
1977	137,493	49,872	36.3	187,365
1978	151,577	57,614	38.0	209,191
1979	182,263	71,215	39.1	253,478
1980	190,113	76,783	40.2	266,896
1981	203,968	85,083	41.7	289,051
1982	212,982	92,050	43.2	305,032
1983	245,296	111,508	45.5	356,804

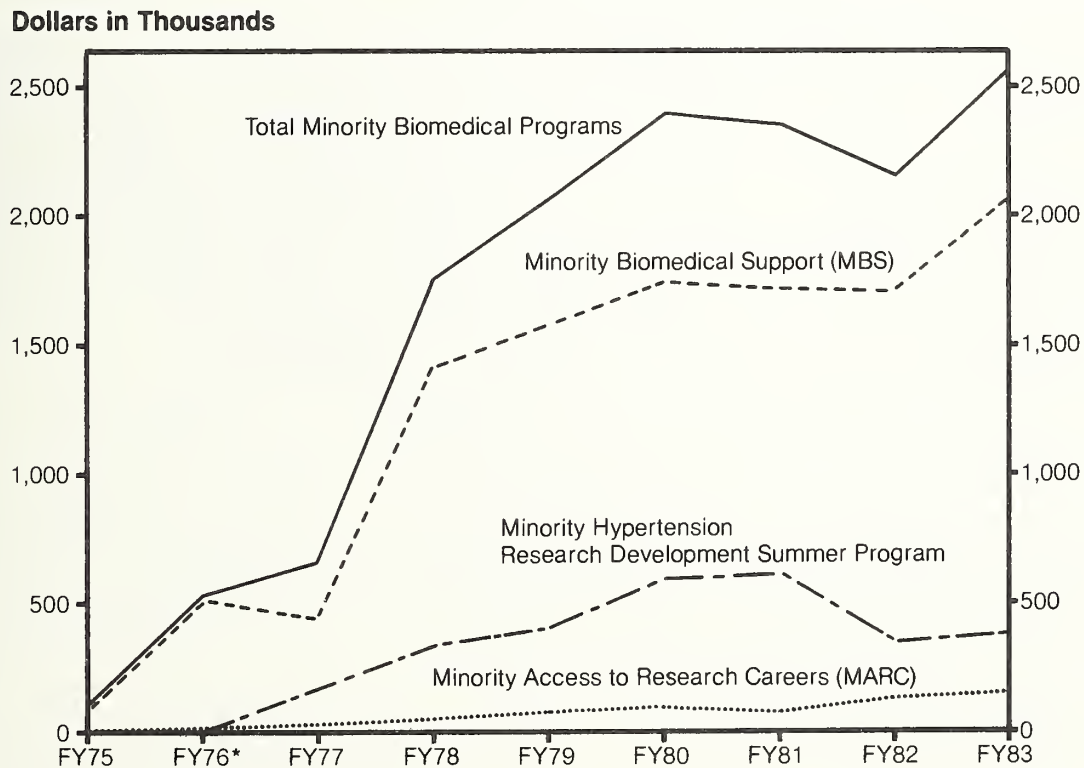
* Includes Regular Project Grants, Program Project Grants, New Investigator Awards, and Small Business Innovation Research Grants.

† Excludes Transition Quarter.

NHLBI Minority Biomedical Programs Obligations, Fiscal Years 1975-1983

PROGRAM	FY 1975	FY 1976*	FY 1977	FY 1978	FY 1979	FY 1980	FY 1981	FY 1982	FY 1983
Minority Biomedical Support (MBS)	\$113,696	\$526,358	\$440,872	\$1,397,921	\$1,587,081	\$1,737,586	\$1,716,545	\$1,708,300	\$2,058,010
Minority Access to Research Careers (MARC)	—	—	16,000	41,148	76,626	89,504	71,613	110,246	132,890
Minority Hypertension Research Development Summer Program	—	—	177,180	332,778	404,618	585,126	590,856	355,321	381,978
Total, Minority Programs	\$113,696	\$526,358	\$634,052	\$1,771,847	\$2,068,325	\$2,412,216	\$2,379,014	\$2,173,867	\$2,572,878

NHLBI Minority Biomedical Programs Obligations: Fiscal Years 1975-1983



* Excludes Transition Quarter.

Specialized Centers of Research (SCORs), Program Initiated in Fiscal Year 1971

Specialized Centers of Research were instituted to advance basic knowledge and to generate the most effective techniques and methods of clinical management and prevention in the areas of arteriosclerosis, hypertension, ischemic heart disease, pulmonary diseases, and thrombosis.

OBLIGATIONS (DOLLARS IN THOUSANDS)

AREAS OF CONCENTRATION	PERIOD OF OPERATION	PRIOR TO FY 1983*	FY 1983	TOTAL TO DATE†
Arteriosclerosis	1971-1983	\$115,682	\$13,602	\$129,284
Hypertension	1971-1983	47,671	6,730	54,401
Ischemic Heart Disease	1975-1983	85,281	12,417	97,698
Chronic Airway Diseases	1977-1983	14,529	2,140	16,669
Pediatric Pulmonary Diseases	1977-1983	24,612	4,657	29,269
Pulmonary Vascular Diseases	1977-1983	8,124	2,187	10,311
Fibrotic and Immunological Interstitial Lung Diseases	1977-1983	16,943	2,560	19,503
Adult Respiratory Failure	1978-1983	7,051	2,862	9,913
Thrombosis	1971-1983	38,616	5,517	44,133
Pulmonary Diseases	1971-1976	44,993	—	44,993
Total, NHLBI		\$403,502	\$52,672	\$456,174

* Excludes Transition Quarter, 1976.

† September 30, 1983.

ARTERIOSCLEROSIS

In eight SCORs, researchers are involved in the study of hyperlipidemia and vascular diseases, including animal and tissue studies and basic laboratory investigations.



OBLIGATIONS

Fiscal Year 1983 \$13,601,681

CURRENT ACTIVE ORGANIZATIONS

GRANT NUMBERS

1. Baylor College of Medicine, Houston, Texas	HL 27341
2. Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, North Carolina	HL 14164
3. Columbia University, New York, New York	HL 21006
4. Louisiana State University, Baton Rouge, Louisiana	HL 15103
5. University of California, San Diego, La Jolla, California	HG14197
6. University of California, San Francisco, California	HL 14237
7. University of Chicago, Chicago, Illinois	HL 15062
8. University of Iowa, Iowa City, Iowa	HL 14230

HYPERTENSION

In five SCORs, scientists study the etiology and pathogenesis of hypertension and are developing and applying new knowledge for the improved diagnosis and management of the disease.

OBLIGATIONS

Fiscal Year 1983 \$6,730,029



CURRENT ACTIVE ORGANIZATIONS

GRANT NUMBERS

- 1. Boston University, Boston, Massachusetts HL 18318
- 2. Cornell University Medical School, New York, New York HL 18323
- 3. University of Alabama, Birmingham, Alabama HL 25451
- 4. University of California, San Diego, La Jolla, California HL 25457
- 5. Vanderbilt University School of Medicine, Nashville, Tennessee HL 14192

ISCHEMIC HEART DISEASE

In eight SCORs, researchers conduct integrated multidisciplinary studies of the entire spectrum of ischemic heart disease, ranging from the most basic research investigations to early clinical assessment of new therapeutic modalities.

OBLIGATIONS

Fiscal Year 1983 \$12,416,876



CURRENT ACTIVE ORGANIZATIONS

GRANT NUMBERS

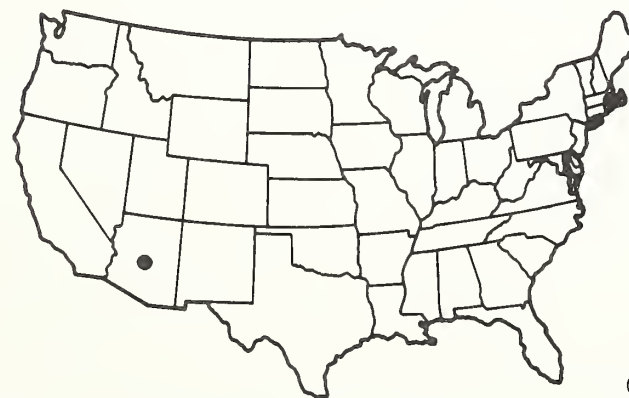
- 1. Cedars-Sinai Medical Center, Los Angeles, California HL 17651
- 2. Duke University, Durham, North Carolina HL 17670
- 3. Harvard Medical School, Boston, Massachusetts HL 26215
- 4. Johns Hopkins University, Baltimore, Maryland HL 17655
- 5. University of Alabama, Birmingham, Alabama HL 17667
- 6. University of California, San Diego, La Jolla, California HL 17682
- 7. University of Texas, Southwestern Medical School, Dallas, Texas HL 17669
- 8. Washington University, St. Louis, Missouri HL 17646

CHRONIC AIRWAY DISEASES

In two SCORs, studies are directed at problems associated with the conduct of basic, applied, and clinical research projects for chronic airway diseases such as emphysema, chronic bronchitis, and asthma.

OBLIGATIONS

Fiscal Year 1983 \$2,139,947



CURRENT ACTIVE ORGANIZATIONS

GRANT NUMBERS

- 1. Harvard University, Boston, Massachusetts HL 19170
- 2. University of Arizona, Tucson, Arizona HL 14136

PEDIATRIC PULMONARY DISEASES

In eight SCORs, research is emphasizing basic and clinical research on neonatal respiratory diseases, cystic fibrosis, and bronchiolitis.

OBLIGATIONS

Fiscal Year 1983 \$4,656,820



CURRENT ACTIVE ORGANIZATIONS

- | | |
|--|----------|
| 1. Boston Hospital for Women, Boston, Massachusetts | HL 27372 |
| 2. Columbia University, College of Physicians and Surgeons, New York, New York | HL 14218 |
| 3. University of California, San Francisco, California | HL 27356 |
| 4. University of Minnesota, Minneapolis-St. Paul, Minnesota | HL 27355 |
| 5. University of North Carolina, Chapel Hill, North Carolina | HL 19171 |
| 6. University of Washington, Seattle, Washington | HL 19187 |
| 7. University of Wisconsin, Madison, Wisconsin | HL 27355 |
| 8. Vanderbilt University School of Medicine, Nashville, Tennessee | HL 14214 |

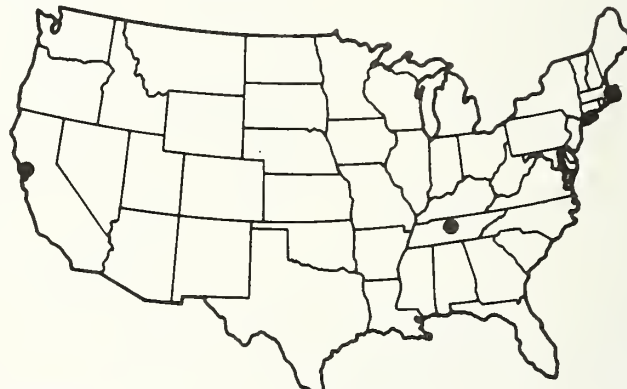
GRANT NUMBERS

PULMONARY VASCULAR DISEASES

Researchers in three SCORs focus on basic and clinical research in pulmonary hypertension, cor pulmonale, and pulmonary edema.

OBLIGATIONS

Fiscal Year 1983 \$2,187,658



CURRENT ACTIVE ORGANIZATIONS

- | | |
|--|----------|
| 1. University of California, San Francisco, California | HL 19155 |
| 2. Vanderbilt University, Nashville, Tennessee | HL 19153 |
| 3. Children's Hospital Medical Center, Boston, Massachusetts | HL 27352 |

GRANT NUMBERS

OCCUPATIONAL AND IMMUNOLOGIC LUNG DISEASES

Researchers in three SCORs are examining the role of inflammation and cellular and humoral immune activities in interstitial pulmonary fibrosis including that which results from environmental or occupational exposure.

OBLIGATIONS

Fiscal Year 1983 \$2,559,796



CURRENT ACTIVE ORGANIZATIONS

- | | |
|---|----------|
| 1. National Jewish Hospital and Research Center, Denver, Colorado | HL 27353 |
| 2. Tulane University, New Orleans, Louisiana | HL 15092 |
| 3. University of Vermont, Burlington, Vermont | HL 14212 |

GRANT NUMBERS

ADULT RESPIRATORY FAILURE

In three SCORs, researchers are conducting studies on biochemical, immunologic, and physiologic mechanisms of acute lung injury and repair in order to improve the diagnosis, management, and prevention of adult respiratory distress syndrome.

OBLIGATIONS

Fiscal Year 1983 \$2,862,504



CURRENT ACTIVE ORGANIZATIONS

- | | |
|--|----------|
| 1. Massachusetts General Hospital, Boston, Massachusetts | HL 23591 |
| 2. St. Louis University, St. Louis, Missouri | HL 30572 |
| 3. University of California, San Diego, La Jolla, California | HL 23584 |
| 4. University of Texas, San Antonio, Texas | HL 23578 |
| 5. University of Washington, Seattle, Washington | HL 30542 |

GRANT NUMBERS

THROMBOSIS

In four SCORs involved with blood diseases, scientists are emphasizing research defining the pathogenic mechanisms of human thrombotic disease and methods for its diagnosis and treatment.

OBLIGATIONS

Fiscal Year 1983 \$5,517,036



CURRENT ACTIVE ORGANIZATIONS

- | | |
|---|----------|
| 1. Cornell University Medical School, New York, New York | HL 18828 |
| 2. Temple University School of Medicine, Philadelphia, Pennsylvania | HL 14217 |
| 3. University of North Carolina, Chapel Hill, North Carolina | HL 26309 |
| 4. Washington University, St. Louis, Missouri | HL 14147 |

GRANT NUMBERS

Research, Demonstration, and Education Program, Initiated in Fiscal Year 1982

Research, demonstration and education projects test the effectiveness of interventions to promote health or prevent disease in defined populations. The interventions selected are those that have already been found to be efficacious in other studies.

Research and Demonstration Projects: Summary by Division

	FY 1982 OBLIGATIONS	FY 1983 OBLIGATIONS	TOTAL OBLIGATIONS TO DATE*
Division of Heart and Vascular Diseases			
Institute-Solicited (RFA)	\$1,672,413	\$2,710,652	\$4,383,065
Investigator-Initiated	—	1,498,234	1,498,234
Subtotal, DHVD	\$1,672,413	\$4,208,886	\$5,881,299
Division of Lung Diseases			
Institute-Solicited (RFA)	479,326	778,266	1,257,592
Investigator-Initiated	—	353,427	353,427
Subtotal, DLD	\$ 479,326	\$1,131,693	\$1,611,019
Division of Blood Diseases and Resources			
Institute-Solicited	—	63,195	63,195
Investigator-Initiated	—	—	—
Subtotal, DBDR	—	\$ 63,195	\$ 63,195
Subtotal, NHLBI			
Institute-Solicited	2,151,739	3,552,113	5,703,852
Investigator-Initiated	—	1,851,661	1,851,661
Total, NHLBI	\$2,151,739	\$5,403,774	\$7,555,513

* September 30, 1983.

OBLIGATIONS

Funding History:

Fiscal Year 1983 \$5,403,774

Fiscal Year 1982 2,151,739

Total Funding to Date \$7,555,513



CURRENT ACTIVE ORGANIZATIONS

GRANT NUMBERS

1. American Health Foundation, New York, New York	HL-21891
2. American Institutes for Research, Cambridge, Massachusetts	HL-32141
3. Baylor College of Medicine, Houston, Texas	HL-28888
4. Blood Center of Southeastern Wisconsin, Milwaukee, Wisconsin	HL-30573
5. Columbia University, New York, New York	HL-30573
6. Cornell University Medical Center, New York, New York	HL-28907
7. Georgetown University, Washington, D.C.	HL-30610
8. Indiana University-Purdue University, Indianapolis, Indiana	HL-30561
9. Memorial Hospital, Pawtucket, Rhode Island	HL-28919
10. State University of New York, Buffalo, New York	HL-28901
11. University of Alabama, Birmingham, Alabama	HL-30630
12. University of Medicine and Dentistry of New Jersey, Newark, New Jersey	HL-28910
13. University of Michigan, Ann Arbor, Michigan	HL-30566
14. University of Minnesota, Minneapolis-St. Paul, Minnesota	HL-30625
15. University of Texas Medical Branch, Galveston, Texas	HL-30682
16. University of Vermont and State Agricultural College, Burlington, Vermont	HL-29957
17. University of Vermont and State Agricultural College, Burlington, Vermont	HL-31032
18. University of Washington, Seattle, Washington	HL-30564
19. Virginia Commonwealth University, Richmond, Virginia	HL-28922

Comprehensive Sickle Cell Centers, Program Initiated in Fiscal Year 1972

In these centers, the gap between re-
search and service is bridged, and
basic and clinical research, clinical tri-
als and application, training, and com-
munity service projects are combined.

OBLIGATIONS

Fiscal Year 1983 \$12,829,206



CURRENT ACTIVE ORGANIZATIONS

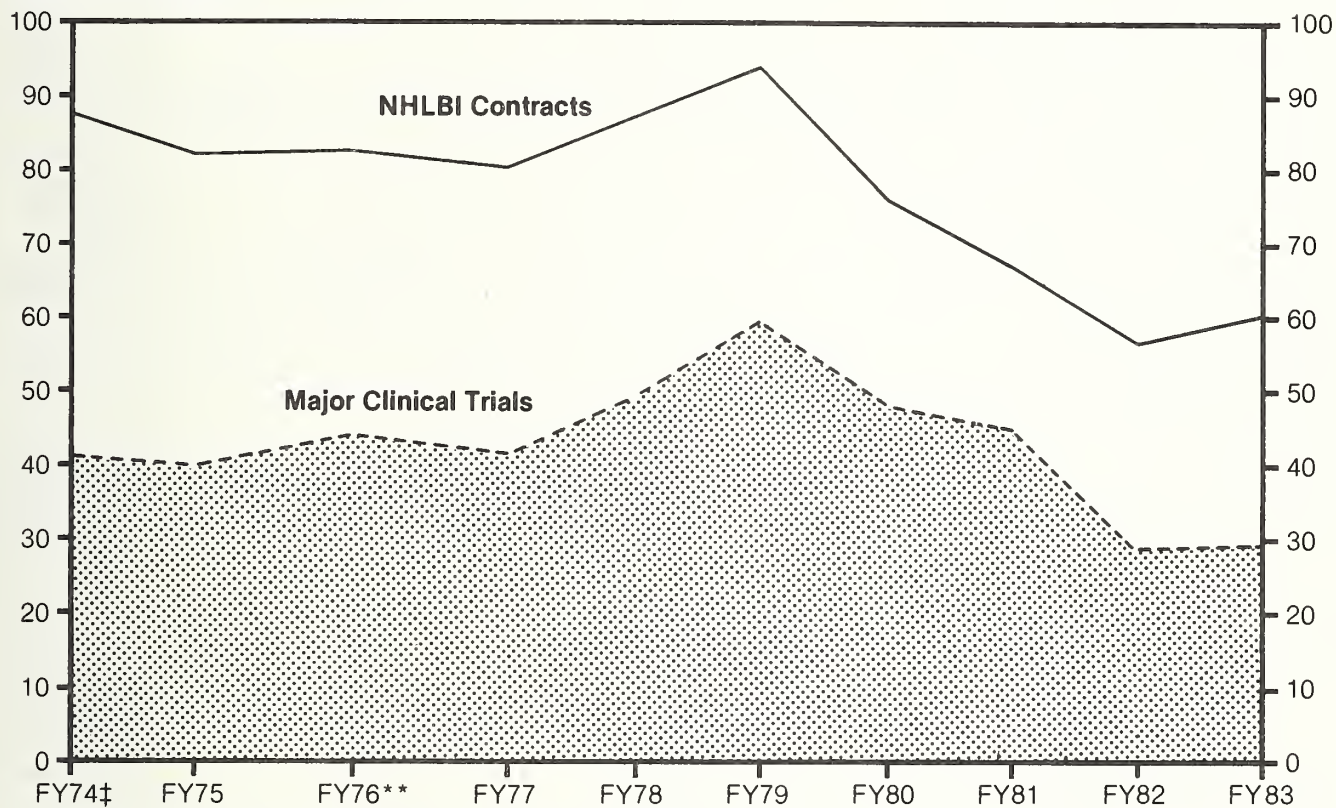
GRANT NUMBERS

1. Boston City Hospital, Boston, Massachusetts	HL 15157
2. Children's Hospital, Cincinnati, Ohio	HL 15996
3. College of Physicians and Surgeons of Columbia University, New York, New York	HL 28381
4. Duke University, Durham, North Carolina	HL 28391
5. Howard University College of Medicine, Washington, D.C.	HL 15160
6. Medical College of Georgia, Augusta, Georgia	HL 29554
7. University of California, San Francisco, California	HL 20985
8. University of Illinois, Chicago, Illinois	HL 15168
9. University of Southern California School of Medicine, Los Angeles, California	HL 15162
10. Wayne State University, Detroit, Michigan	HL 16008

11. RESEARCH AND DEVELOPMENT CONTRACTS AND CLINICAL TRIALS

NHLBI Research and Development Contract Obligations,* Fiscal Years 1974-1983 (Including Funding of Clinical Trials †)

Dollars in Millions



* Excludes intramural and direct operations and program management contracts.

† Excludes \$.8 million in NHLBI funds for the Systolic Hypertension in the Elderly Program (SHEP) clinical trial, which is grant supported.

‡ Reflects release of FY 1973 impounded funds.

** Excludes Transition Quarter.

NHLBI Research and Development Contracts,* Fiscal Years 1974-1983 (Dollars in Thousands)

	FY 1974†	FY 1975	FY 1976‡	FY 1977	FY 1978	FY 1979	FY 1980	FY 1981	FY 1982	FY 1983
Heart	\$64,618	\$59,109	\$64,789	\$63,128	\$73,238	\$78,493	\$66,941	\$60,517	\$47,325	\$52,034
Lung	6,699	9,383	7,006	8,463	5,555	6,264	4,818	3,388	3,289	3,176
Blood	17,352	12,430	10,798	8,436	9,938	8,368	6,232	4,657	6,927	5,232
Total, Research and Development	\$88,669	\$80,922	\$82,593	\$80,027	\$88,731	\$93,125	\$77,991	\$68,562	\$57,541	\$60,442

* Excludes intramural and DOPM contracts; excludes \$.8 million in NHLBI funds for the Systolic Hypertension in the Elderly Program (SHEP) clinical trial, which is grant supported.

† Reflects release of FY 1973 impounded funds.

‡ Excludes Transition Quarter.

History of Major NHLBI Clinical Trials (Dollars in Thousands)*

	FY 1974	FY 1975	FY 1976†	FY 1977	FY 1978	FY 1979	FY 1980	FY 1981	FY 1982	FY 1983
Heart and Vascular Diseases										
Hypertension Detection-and Follow-up Program	\$11,049	\$ 5,673	\$12,021	\$10,351	\$ 7,846	\$ 4,034	\$ 3,431	\$ 1,284	\$ 2,277	\$ 1,141
Lipid Research Clinics‡	16,925	13,512	16,086	14,271	10,528	21,056	15,493	16,248	10,558	17,348
Multiple Risk Factor Intervention Trial	15,381	12,499	14,497	9,042	16,025	12,625	9,402	10,989	2,897	1,400
Coronary Artery Surgery Study	880	3,201	873	2,846	4,590	1,784	4,444	2,401	2,111	795
Aspirin Myocardial Infarction Study	—	4,510	3,020	1,957	3,114	3,784	372	—	—	—
Beta-Blocker Heart Attack Trial	—	—	—	545	3,722	5,985	3,847	3,887	241	153
Multicenter Investigation of Limitation of Infarct Size	—	—	—	—	3,323	2,813	2,685	3,490	3,134	2,566
Cardiac Arrhythmia Pilot Study	—	—	—	—	—	—	—	—	347	2,062
Thrombolysis in Myocardial Infarction	—	—	—	—	—	—	—	—	—	803
Subtotal, Heart and Vascular Diseases	44,235	39,395	48,497	39,012	49,148	52,081	39,674	38,299	21,565	26,268
Lung Diseases										
Neonatal Respiratory Distress Syndrome	—	—	134	1,743	347	1,487	746	454	563	—
Nocturnal Oxygen Therapy	—	—	—	1,331	914	1,243	371	—	—	16
Clinical Study of Intermittent Positive Pressure Breathing	—	—	—	170	1,624	1,358	1,543	2,024	1,520	588
Diagnosis of Pulmonary Embolism Trial	—	—	—	—	—	—	—	—	—	423
Subtotal, Lung Diseases	—	—	134	3,244	2,855	4,088	2,660	2,478	2,083	1,027
Blood Diseases and Resources										
Factor VIII	—	1,274	—	751	401	381	—	—	—	—
Granulocyte Studies	—	—	—	443	355	535	—	—	—	—
Clinical Course of Sickle Cell Disease	—	—	—	482	953	4,583	3,910	3,394	5,608	2,128
Subtotal, Blood Diseases and Resources	—	1,274	—	1,676	1,700	5,499	3,910	3,394	5,608	2,128
Total, NHLBI	\$44,235	\$40,669	\$46,631	\$43,932	\$53,712	\$61,668	\$46,244	\$44,171	\$29,256	\$29,423

* Excludes \$.8 million in NHLBI funds for the Systolic Hypertension in the Elderly Program (SHEP) clinical trial, which is grant supported.

† Excludes Transition Quarter.

‡ Includes Coronary Primary Prevention Trial (CPPT).

Major NHLBI Clinical Trials: Summary by Division*

	TOTAL OBLIGATIONS PRIOR TO FY 1983†	TOTAL FY 1983 OBLIGATIONS	TOTAL OBLIGATIONS TO DATE‡
Division of Heart and Vascular Diseases			
Aspirin Myocardial Infarction Study	\$ 16,859,062	\$ —	\$ 16,859,062
Beta-Blocker Heart Attack Trial	18,226,743	152,648	18,379,391
Cardiac Arrhythmia Pilot Study	347,297	2,062,141	2,409,438
Coronary Artery Surgery Study	23,225,812	795,261	24,021,073
Hypertension Detection and Follow-up Program	70,452,306	1,140,763	71,593,069
Lipid Research Clinics**	152,950,632	17,348,434	170,299,066
Multicenter Investigation of Limitation of Infarct Size	15,702,663	2,566,064	18,268,727
Multiple Risk Factor Intervention Trial	113,744,674	1,400,000	115,144,674
Thrombolysis in Myocardial Infarction	—	803,377	803,377
Subtotal, DHVD	411,509,189	26,268,688	437,777,877
Division of Lung Diseases			
Clinical Study of Intermittent Positive Pressure Breathing	8,239,607	587,786	8,827,393
Neonatal Respiratory Distress Syndrome	5,455,173	—	5,455,173
Nocturnal Oxygen Therapy	3,977,382	16,374	3,993,756
Diagnosis of Pulmonary Embolism Trial	—	423,353	423,353
Subtotal, DLD	17,672,162	1,027,513	18,699,675
Division of Blood Diseases and Resources			
Clinical Course of Sickle Cell Disease	18,929,623	2,127,639	21,057,262
Factor VIII Study	2,852,516	—	2,852,516
Granulocyte Studies	1,635,142	—	1,635,142
Subtotal, DBDR	23,417,281	2,127,639	25,544,920
Total, NHLBI	\$452,598,632	\$29,423,840	\$482,022,472

* Excludes \$.8 million in NHLBI funds for the Systolic Hypertension in the Elderly Program (SHEP) clinical trial, which is grant supported.

† Includes FY 1976 Transition Quarter.

‡ September 30, 1982.

** Includes Coronary Primary Prevention Trial (CPPT).

**Beta-Blocker Heart Attack Trial (BHAT):
Division of Heart and Vascular Diseases,
Program Initiated in Fiscal Year 1977**

This trial was designed to determine whether the regular administration of propranolol (a beta-blocking agent) to people who had at least one documented heart attack would result in a significant reduction in mortality over a 3-year period.



OBLIGATIONS

Funding History:

Fiscal Year 1983 \$ 152,648

Fiscal Years

1977-1982 \$18,226,743

Total Funding to Date . . . \$18,379,391

CURRENT ACTIVE ORGANIZATION

CONTRACT NUMBER

1. Coordinating Center: University of Texas, Houston, Texas HV-7-2948

**Coronary Artery Surgery Study (CASS):
Division of Heart and Vascular Diseases,
Program Initiated in Fiscal Year 1973**

The Coronary Artery Surgery Study evaluates the efficacy of coronary artery bypass surgery and its potential therapeutic effect in reducing morbidity and mortality in coronary artery disease.



OBLIGATIONS

Funding History:

Fiscal Year 1983 \$ 795,261

Fiscal Years

1973-1982 \$23,225,812

Total Funding to Date . . . \$24,021,073

CURRENT ACTIVE ORGANIZATIONS

CONTRACT NUMBERS

- | | |
|--|-----------|
| 1. Albany Medical College, Albany, New York | HV-6-2921 |
| 2. Boston University Medical Center, Boston, Massachusetts | HV-6-2923 |
| 3. Loma Linda University, Loma Linda, California | HV-3-2975 |
| 4. Marshfield Clinic, Marshfield, Wisconsin | HV-3-2981 |
| 5. Mayo Clinic, Rochester, Minnesota | HV-3-2984 |
| 6. Montreal Heart Institute, Montreal, Quebec, Canada | HV-3-2983 |
| 7. St. Louis University, St. Louis, Missouri | HV-3-2980 |
| 8. St. Luke's Hospital Center, New York, New York | HV-3-2978 |
| 9. Stanford University, Stanford, California | HV-3-2974 |
| 10. University of Alabama, Birmingham, Alabama | HV-6-2922 |
| 11. Coordinating Center: University of Washington, Seattle, Washington | HV-3-2973 |

Hypertension Detection and Follow-up Program (HDFP): Division of Heart and Vascular Diseases, Program Initiated in Fiscal Year 1971

This program determines, in the general population, the extent to which mortality and morbidity associated with elevated blood pressure can be reduced by systematic antihypertensive drug management.



OBLIGATIONS

Funding History:

Fiscal Year 1983 . . . \$ 1,140,763

Fiscal Years

1971-1982 \$70,452,306

Total Funding to Date . . . \$71,593,069

CURRENT ACTIVE ORGANIZATION

CONTRACT NUMBER

1. Coordinating Center: University of Texas School of Public Health, Houston, Texas HV-1-2442

Lipid Research Clinics (LRC): Division of Heart and Vascular Diseases, Program Initiated in Fiscal Year 1971

In these clinics, a climate is created for better diagnosis, management, and further research studies in hyperlipoproteinemia. Studies include the prevalence of abnormalities, their causes and treatment, and the effect of this treatment on premature atherosclerosis. In the Coronary Primary Prevention Trial (CPPT), the largest component of the LRC, researchers are testing the hypothesis that long-term reduction of serum cholesterol in men with elevated cholesterol will lead to a reduction in coronary heart disease.



OBLIGATIONS

Funding History:

Fiscal Year 1983 . . . \$ 17,348,434

(CPPT \$ 243,254)

Fiscal Years

1971-1982 \$152,950,632

(CPPT \$125,797,923)

Total Funding to Date . . . \$170,299,066

(CPPT \$126,041,177)

Lipid Research Clinics (Cont.)

CURRENT ACTIVE ORGANIZATIONS

CONTRACT NUMBERS

1. Baylor College of Medicine, Houston, Texas	HV-1-2156
2. George Washington University School of Medicine, Washington, D.C.	HV-3-2931
3. Hadassah Medical Organization, Jerusalem, Israel	HV-5-3015
4. Johns Hopkins University, Baltimore, Maryland	HV-1-2158
5. Oklahoma Medical Research Foundation, Oklahoma City, Oklahoma	HV-2-2932
6. Stanford University, Stanford, California	HV-1-2161
7. University of California, San Diego, La Jolla, California	HV-1-2160
8. University of Cincinnati, Cincinnati, Ohio	HV-2-2914
9. University of Iowa, Iowa City, Iowa	HV-2-2913
10. University of Minnesota, Minneapolis, Minnesota	HV-2-2915
11. University of Minnesota, Minneapolis, Minnesota	HV-1-2903
12. University of Toronto, Toronto, Ontario, Canada	HV-2-2917
13. University of Washington, Seattle, Washington	HV-1-2157
14. Washington University, St. Louis, Missouri	HV-2-2916
15. Central Clinical Laboratory: Bio-Science Laboratories, Van Nuys, California	HV-3-2961
16. Central Exercise Laboratory: University of Alabama, Birmingham, Alabama	HV-1-2159
17. Registry and Coordinating Center: University of North Carolina, Chapel Hill, North Carolina	HV-1-2243

Multicenter Investigation of Limitation of Infarct Size (MILIS): Division of Heart and Vascular Diseases, Program Initiated in Fiscal Year 1977

This study assesses the ability of two separate therapeutic interventions—propranolol and hyaluronidase—to limit the ultimate size of an acute myocardial infarction. A secondary objective is to assess the influence of these therapies upon ventricular function and morbidity following myocardial infarction.



OBLIGATIONS

Funding History:

Fiscal Year 1983 \$ 2,566,064

Fiscal Years

1977-1982 \$15,702,663

Total Funding to Date . . \$18,268,727

CURRENT ACTIVE ORGANIZATIONS

CONTRACT NUMBERS

1. President and Fellows of Harvard College, Cambridge, Massachusetts	HV-7-2940
2. University of Texas Health Science Center, Dallas, Texas	HV-7-2942
3. Washington University, St. Louis, Missouri	HV-7-2941
4. Data Coordinating Center: Research Triangle Institute, Research Triangle Park, North Carolina	HV-7-2979

Multiple Risk Factor Intervention Trial (MRFIT): Division of Heart and Vascular Diseases, Program Initiated in Fiscal Year 1977

This clinical trial was conducted to determine whether a preventive program directed at the reduction of serum cholesterol, reduction of blood pressure, and reduction or elimination of cigarette smoking among men (age 35-37) would significantly reduce the incidence of myocardial infarction and death from coronary heart diseases.



OBLIGATIONS

Funding History:

Fiscal Year 1983 . . . \$ 1,400,000

Fiscal Years

1977-1982 \$113,744,674

Total Funding to Date . \$115,144,674

CURRENT ACTIVE ORGANIZATIONS

CONTRACT NUMBERS

- | | |
|---|-----------|
| 1. Boston University, Boston, Massachusetts | HV-3-3106 |
| 2. Dade County Department of Public Health, Miami, Florida | HV-4-2933 |
| 3. Northwestern University, Chicago, Illinois | HV-2-2978 |
| 4. Pacific Medical Center, San Francisco, California | HV-2-2981 |
| 5. Rush-Presbyterian-St. Luke's Medical Center, Chicago, Illinois | HV-4-2930 |
| 6. Rutgers Medical School, Piscataway, New Jersey | HV-4-2929 |
| 7. University of California, Davis, California | HV-2-2977 |
| 8. University of Minnesota, Minneapolis-St. Paul, Minnesota | HV-2-2971 |
| 9. Central Laboratory: Institute of Medical Sciences, Pacific Medical Center, San Francisco, California | HV-3-3101 |
| 10. ECG Laboratory: Dalhousie University, Halifax, Nova Scotia, Canada | HV-4-2911 |

Thrombolysis in Myocardial Infarction (TIMI): Division of Heart and Vascular Diseases Program Initiated in Fiscal Year 1983

This is a multicentered collaborative clinical trial designed to assess the efficacy of thrombolytic therapy in patients with acute myocardial infarction. The major objective is to determine whether pharmacologic lysis of occlusive coronary thrombi during the early hours of a myocardial infarction salvages jeopardized myocardium, preserves ventricular function, and thereby improves morbidity and mortality in patients with this disease.



OBLIGATIONS

Funding History:

Fiscal Year 1983	\$803,377
Total Funding to Date	\$803,377

CURRENT ACTIVE ORGANIZATIONS

CONTRACT NUMBERS

1. Baylor College of Medicine, Houston, Texas	HV-3-8034
2. Beth Israel Hospital, Boston, Massachusetts	HV-3-8027
3. Columbia University, New York, New York	HV-3-8025
4. Cornell Medical Center, New York Hospital, New York, New York	HV-3-8029
5. George Washington University, Washington, D.C.	HV-3-8032
6. Maryland Medical Research Institute, Inc., Baltimore, Maryland	HV-3-8018
7. Mayo Foundation, Rochester, Minnesota	HV-3-8030
8. Montefiore Medical Center, Bronx, New York	HV-3-8028
9. Rhode Island Hospital, Providence, Rhode Island	HV-3-8023
10. University Hospital, Inc., Boston, Massachusetts	HV-3-8031
11. University of Massachusetts, Worcester, Massachusetts	HV-3-8033
12. University of Texas Health Science Center, Dallas, Texas	HV-3-8022
13. University of Washington, Seattle, Washington	HV-3-8021
14. Washington University, St. Louis, Missouri	HV-3-8026
15. Yale University, New Haven, Connecticut	HV-3-8017
16. Yale University, New Haven, Connecticut	HV-3-8024

**Clinical Study of Intermittent Positive Pressure Breathing (IPPB):
Division of Lung Diseases,
Program Initiated in Fiscal Year 1977**

IPPB is a collaborative clinical trial to evaluate the effects of long-term intermittent positive pressure breathing treatment when used as an adjunct to the overall care of ambulatory patients with chronic obstructive lung disease.



OBLIGATIONS

Funding History:

Fiscal Year 1983	\$ 587,786
Fiscal Years	
1977-1982	\$8,239,607
Total Funding to Date	\$8,827,393

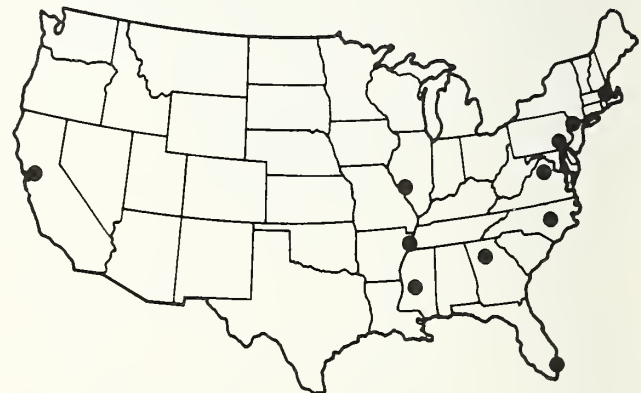
CURRENT ACTIVE ORGANIZATIONS

CONTRACT NUMBERS

- | | |
|--|-----------|
| 1. Baylor College of Medicine, Houston, Texas | HR-7-2905 |
| 2. Loma Linda University, Loma Linda, California | HR-7-2904 |
| 3. University of California, San Francisco, California | HR-7-2906 |
| 4. University of Manitoba, Winnipeg, Manitoba, Canada | HR-7-2902 |
| 5. University of Oklahoma, Oklahoma City, Oklahoma | HR-7-2903 |
| 6. Coordinating Center: George Washington University, Washington, D.C. | HR-7-2901 |

**Cooperative Study of the Clinical Course of Sickle Cell Disease:
Division of Blood Diseases and Resources,
Program Initiated in Fiscal Year 1977**

This collaborative study identifies the frequency of occurrence and concurrence of health-related events in the clinical course of sickle cell disease by prospective longitudinal and cross-sectional studies in order to establish and evaluate the factors which determine the clinical course and the presence or absence of complications of sickle cell disease.



OBLIGATIONS

Funding History:

Fiscal Year 1983	\$ 2,127,639
Fiscal Years	
1977-1982	\$18,929,623
Total Funding to Date	\$21,057,262

Cooperative Study of the Clinical Course of Sickle Cell Disease (Cont.)

CURRENT ACTIVE ORGANIZATIONS	CONTRACT NUMBERS
1. Children's Hospital, Oakland, California	HB-7-3004
2. Children's Hospital, Philadelphia, Pennsylvania	HB-7-2997
3. Duke University, Durham, North Carolina	HB-7-2993
4. George Washington University, Washington, D.C.	HB-7-2994
5. Trustees of Health and Hospitals of the City of Boston, Inc., Boston, Massachusetts	HB-7-3003
6. Howard University, Washington, D.C.	HB-7-2991
7. Jewish Hospital and Medical Center of Brooklyn, Brooklyn, New York	HB-7-3002
8. Medical College of Georgia, Augusta, Georgia	HB-7-3000
9. Michael Reese Hospital, Chicago, Illinois	HB-7-2998
10. St. Luke's Hospital, New York, New York	HB-7-3006
11. University of Miami, Coral Gables, Florida	HB-7-2992
12. University of Mississippi, Jackson, Mississippi	HB-7-3005
13. University of Tennessee, Memphis, Tennessee	HB-7-2995
14. Washington University, St. Louis, Missouri	HB-7-3001
15. Yale University, New Haven, Connecticut	HB-7-2996
16. Coordinating Center: University of Illinois, Chicago, Illinois	HB-7-2982

Cardiac Arrhythmia Pilot Study (CAPS): Division of Heart and Vascular Diseases, Program Initiated in Fiscal Year 1982

This study will compare the effectiveness and safety of four drugs in suppressing ventricular arrhythmias in post-myocardial infarction patients. It will also assess the feasibility of carrying out a full-scale trial to evaluate reduction in arrhythmias as a factor in reducing mortality.



OBLIGATIONS

Funding History:

Fiscal Year 1983 . . . \$2,062,141

Fiscal Year 1982 . . . \$ 347,297

Total Funding to Date . . . \$2,409,438

CURRENT ACTIVE ORGANIZATIONS	CONTRACT NUMBERS
1. Baylor College of Medicine, Houston, Texas	HV-2-8005
2. Clinical Data, Inc., Boston, Massachusetts	HV-3-8020
3. Columbia University, New York City, New York	HV-2-8006
4. Johns Hopkins University, Baltimore, Maryland	HV-2-8007
5. Montreal Heart Institute, Montreal, Quebec, Canada	HV-2-8009
6. Rhode Island Hospital, Providence, Rhode Island	HV-2-8010
7. Salt Lake City Research Foundation, Salt Lake City, Utah	HV-2-8011
8. University of Alabama, Birmingham, Alabama	HV-2-8012
9. University of Rochester, Rochester, New York	HV-2-8013

Cardiac Arrhythmia Pilot Study (Cont.)

- 10. University of Virginia Medical College, Charlottesville, Virginia HV-2-8008
- 11. University of Washington, Seattle, Washington HV-2-8004
- 12. Vanderbilt University Medical Center, Nashville, Tennessee HV-2-8014

**Diagnosis of Pulmonary Embolism Trial (DPET):
Division of Lung Diseases,
Program Initiated in Fiscal Year 1983**

This clinical trial will evaluate the usefulness of ventricular-perfusion scanning and pulmonary angiography for the diagnosis of pulmonary embolism.



OBLIGATIONS

Funding History:
 Fiscal Year 1983 \$423,353
 Total Funding to Date \$423,353

CURRENT ACTIVE ORGANIZATIONS

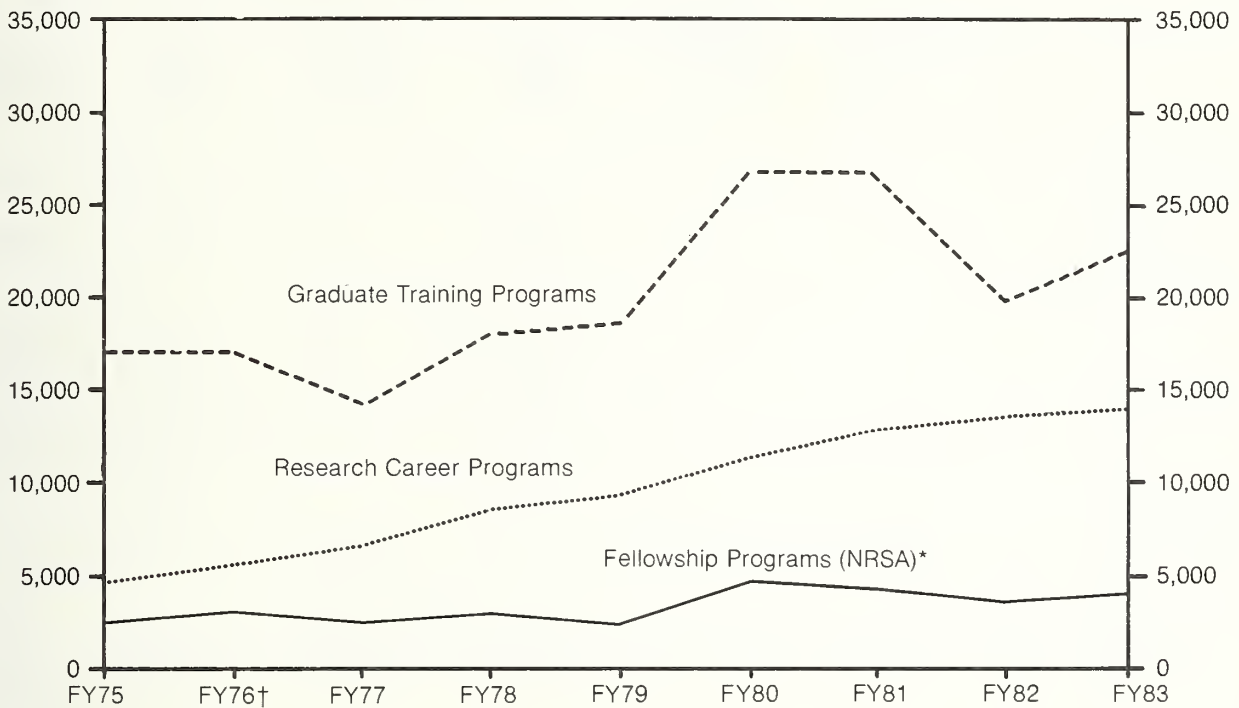
CONTRACT NUMBERS

- 1. Duke University Medical Center, Durham, North Carolina HR-3-4007
- 2. Henry Ford Hospital, Detroit, Michigan HR-3-4008
- 3. Maryland Medical Research Institute, Inc., Baltimore, Maryland HR-3-4013
- 4. Massachusetts General Hospital, Boston, Massachusetts HR-3-4009
- 5. Regents of the University of Michigan, Ann Arbor, Michigan HR-3-4010
- 6. University of Pennsylvania, Philadelphia, Pennsylvania HR-3-4011
- 7. Yale University, New Haven, Connecticut HR-3-4012

12. RESEARCH TRAINING AND CAREER DEVELOPMENT PROGRAMS

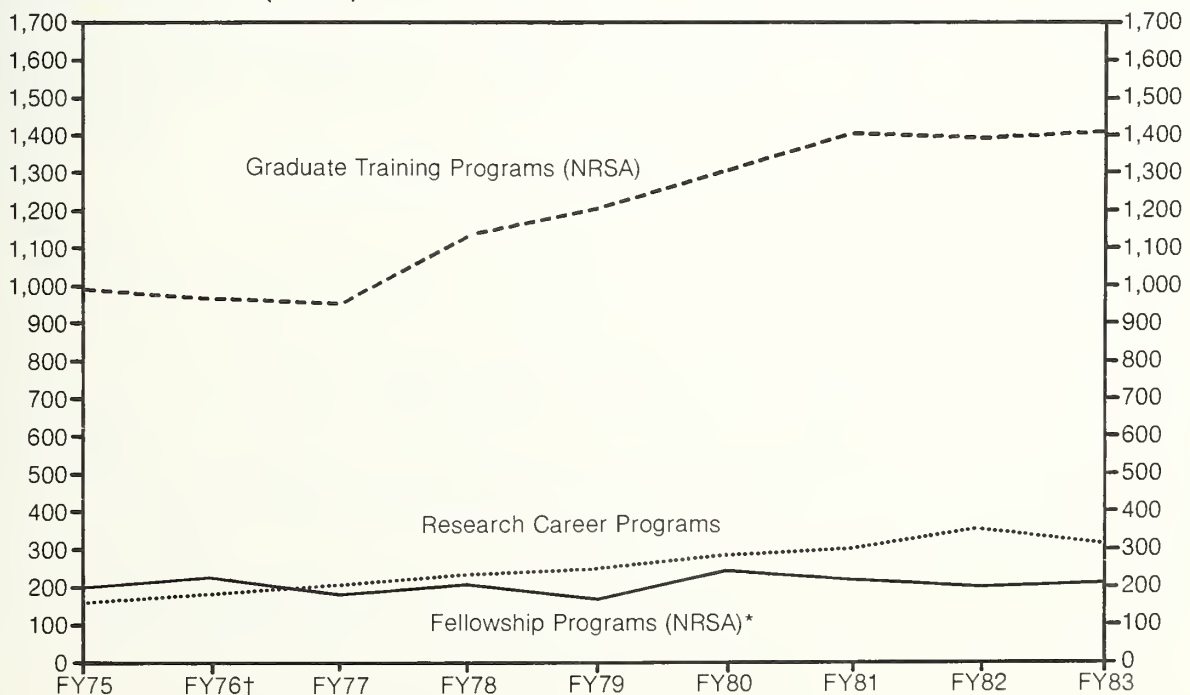
Research Training and Development Obligations: Fiscal Years 1975-1983

Dollars in Thousands



Number of Trainees (Full-Time Training Positions): Fiscal Years 1975-1983

Number of Trainees (FTTPs)



* National Research Service Awards.

† Excludes Transition Quarter.

Fiscal Year 1983 Training Obligations by Activity*

	NUMBER OF AWARDS OBLIGATED	TRAINEES (FULL-TIME TRAINING POSITIONS)	DIRECT COST	INDIRECT COST	TOTAL COST	PERCENT OF TOTAL NHLBI TRAINING PROGRAM DOLLARS
Fellowship Programs						
Individual NRSA (F32)	197	197	\$ 3,748,169	\$ 0	\$ 3,748,169	14.1
Senior Fellowships NRSA (F33)	7	7	202,459	0	202,459	0.8
Minority Access to Research Career Fellowships NRSA (F34)	6	6	132,890	0	132,890	0.5
Subtotal, Fellowships	210	210	4,083,518	0	4,083,518	15.4
Graduate Training Programs						
Institutional NRSA (T32)	212	1,266	19,627,726	1,706,959	21,334,685	80.3
Minority Summer Hypertension NRSA (T35)	12	28	346,786	35,192	381,978	1.4
Off-Quarter Professional Student Training NRSA (T35)	24	122	707,070	62,873	769,943	2.9
Subtotal, Training Grants	248	1,416	20,681,582	1,805,024	22,486,606	84.6
Total, Training Programs	458	1,626	\$24,765,100	\$1,805,024	\$26,570,124	100.0

* Preliminary.

History of Training Obligations by Activity for Fiscal Years 1975-1983 (Dollars in Thousands)

	FY 1975	FY 1976*	FY 1977	FY 1978	FY 1979	FY 1980†	FY 1981	FY 1982	FY 1983
Fellowship Programs									
Postdoctoral and Special Fellowships (F02, F03)	\$ 101	\$ 20	—	—	—	—	—	—	—
Individual Research Training Fellowships ("Weinberger") (F22)	946	676	28	—	—	—	—	—	—
Individual NRSA (F32)	1,702	2,574	2,650	2,988	2,419	4,496	4,126	3,488	3,748
Senior Fellowships NRSA (F33)	—	—	—	—	—	228	298	107	202
Minority Access to Research Career Fellowships NRSA (F34)	—	—	—	41	77	90	72	110	133
Subtotal, Fellowships	2,749	3,270	2,678	3,029	2,496	4,814	4,496	3,705	4,083
Graduate Training Programs									
Graduate Training Grants (T01)	12,175	8,098	3,866	777	—	—	—	—	—
Institutional NRSA (T32)	4,685	8,793	10,363	16,969	18,217	25,380	25,376	18,905	21,335
Minority Summer Hypertension NRSA (T35)	—	—	177	333	404	583	591	355	382
Pulmonary Faculty Training NRSA (T17)	359	398	—**	84	193	464	89	—	—
Off-Quarter Professional Student Training NRSA (T35)	—	—	—	—	—	647	908	666	770
Subtotal, Training Grants	17,219	17,289	14,406	18,163	18,814	27,074	26,964	19,926	22,487
Total, Training Programs	\$19,968	\$20,559	\$17,084	\$21,192	\$21,310	\$31,888	\$31,460	\$23,631	\$26,570

* Excludes Transition Quarter.

† Stipend increase occurred in fiscal year 1980.

** Funded from unobligated balances.

**Number of Trainees* by Activity (Full-Time Training Positions):†
Fiscal Years 1975-1983**

	FY 1975	FY 1976‡	FY 1977	FY 1978	FY 1979	FY 1980	FY 1981	FY 1982	FY 1983
Fellowship Programs									
Postdoctoral and Special Fellowships (F02, F03)	10	1	—	—	—	—	—	—	—
Individual Research Training Fellowships ("Weinberger") (F22)	56	43	2	—	—	—	—	—	—
Individual NRSA (F32)	138	193	188	215	168	230	212	193	197
Senior Fellowships NRSA (F33)	—	—	—	—	—	7	10	4	7
Minority Access to Research Career Fellowships NRSA (F34)	—	—	—	2	4	4	3	5	6
Subtotal, Fellowships	204	237	190	217	172	241	225	202	210
Graduate Training Programs									
Graduate Training Grants (T01)	690	449	233	37	—	—	—	—	—
Institutional NRSA (T32)	279	491	673	1,056	1,127	1,168	1,241	1,260	1,266
Minority Summer Hypertension NRSA (T35)	—	—	10	17	29	29	36	25	28
Pulmonary Faculty Training NRSA (T17)	24	24	24	24	24	24	24	—	—
Off-Quarter Professional Student Training NRSA (T35)	—	—	—	—	—	79	108	115	122
Subtotal, Training Grants	993	964	940	1,134	1,180	1,300	1,409	1,400	1,416
Total, Training Programs	1,197	1,201	1,130	1,351	1,352	1,541	1,634	1,602	1,626

* Recommended positions.
† Full-time training positions.
‡ Excludes Transition Quarter.

Number of Awards* in NHLBI Research Career Programs: Fiscal Years 1975-1983

Program	FY 1975	FY 1976†	FY 1977	FY 1978	FY 1979	FY 1980	FY 1981	FY 1982	FY 1983
Special Emphasis Research Career Award (K01)‡	—	—	—	4	5	7	8	8	3
Research Career Development Award (K04)	107**	133**	145	164	176	166	163	155	137
Research Career Award (K06)	23	21	21	21	21	21	21	20	18
Preventive Cardiology Award (K07)	—	—	—	—	7	11	14	18	26
Pulmonary Academic Award (K07)	30	34	28	32	29	28	23	20	21
Transfusion Medicine Academic Award (K07)	—	—	—	—	—	—	—	—	5
Pulmonary Faculty Development Award (K08)	—	5	13	25	19	26	24	17	8
Clinical Investigator Award (K08)	—	—	—	—	—	34	56	77	96
Total	160	193	207	246	257	293	309	315	314

* Funded positions.

† Excludes Transition Quarter.

‡ Diabetes and heart disease.

** Includes K03s.

NHLBI Research Career Programs: Fiscal Years 1975-1983 (Dollars in Thousands)

Program	FY 1975	FY 1976*	FY 1977	FY 1978	FY 1979	FY 1980	FY 1981	FY 1982	FY 1983
Special Emphasis Research Career Award (K01)†	—	—	—	161	218	314	416	413	153
Research Career Development Award (K04)	2,618‡	3,191‡	4,362	5,817	6,419	6,135	6,253	5,998	5,299
Research Career Award (K06)	715	659	660	668	673	682	685	653	574
Preventive Cardiology Award (K07)	—	—	—	—	432	797	1,121	1,405	2,104
Pulmonary Academic Award (K07)	1,445	1,556	1,084	1,369	1,210	1,222	1,032	908	1,025
Transfusion Medicine Academic Award (K07)	—	—	—	—	—	—	—	—	284
Pulmonary Faculty Development Award (K08)	—	128	322	640	566	876	724	528	253
Clinical Investigator Award (K08)	—	—	—	—	—	1,323	2,508	3,444	4,478
Total	4,778	5,534	6,428	8,655	9,518	11,349	12,739	13,349	14,170

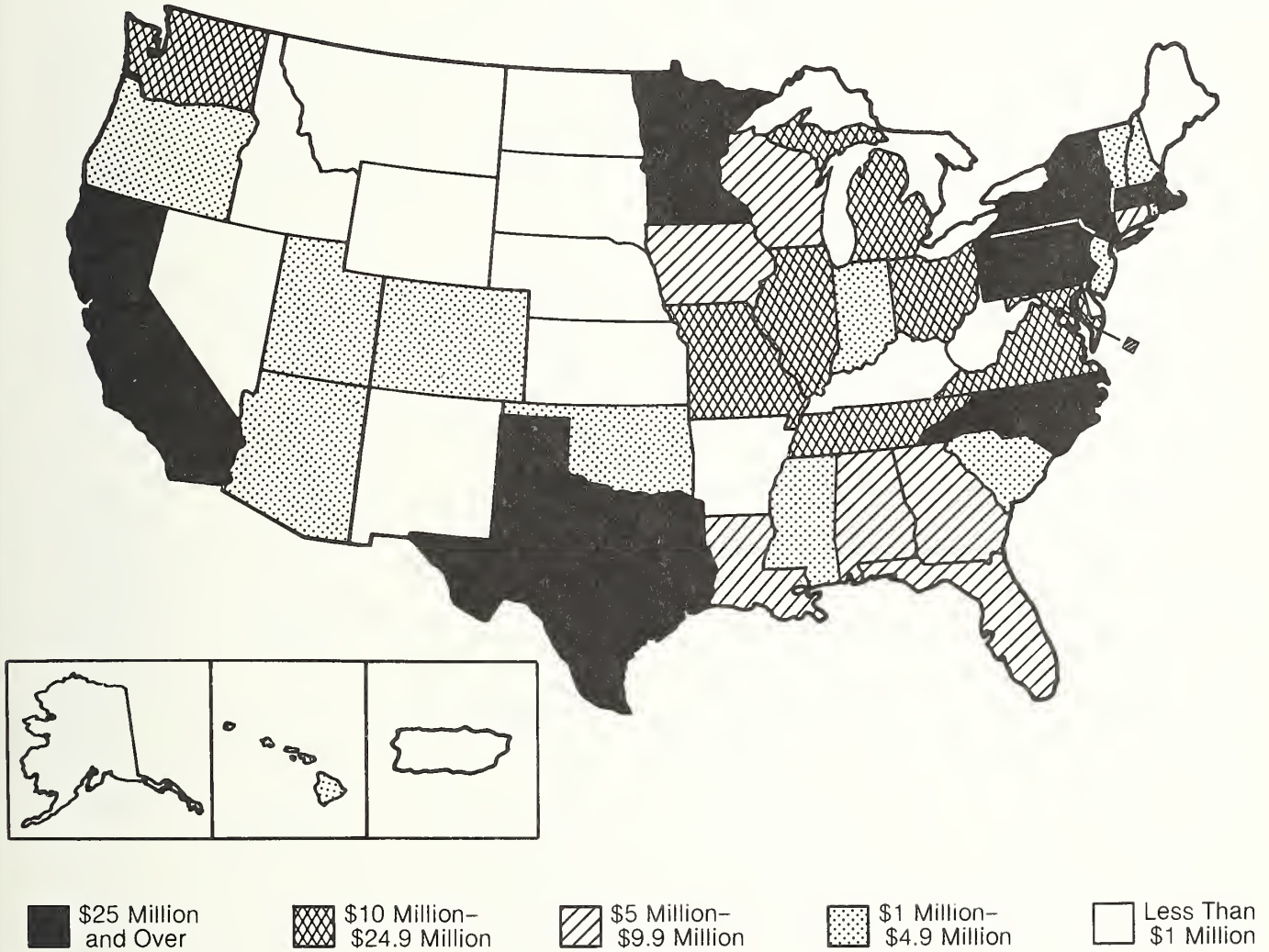
* Excludes Transition Quarter

† Diabetes and heart disease.

‡ Includes K03s.

13. DISTRIBUTION OF GRANTS, CONTRACTS, AND TRAINING FUNDING: FISCAL YEAR 1983

Geographic Distribution of Obligations by State, Fiscal Year 1983



Institutional Distribution of Obligations

INSTITUTION	TOTALS		RESEARCH GRANTS		RESEARCH TRAINING AND DEVELOPMENT		CONTRACTS	
	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.
Alabama								
Alabama Agricultural and Mechanical University	1	\$ 58,976	1	\$ 58,976	—	\$ —	—	\$ —
Auburn University, Auburn	1	72,228	1	72,228	—	—	—	—
U.S. Centers for Disease Control	1	5,000	—	—	—	—	1	5,000
University of Alabama, Birmingham	34	6,515,574	27	5,826,670	5	356,595	2	332,309
University of South Alabama	14	783,319	13	754,506	1	28,813	—	—
Total, Alabama	51	7,435,097	42	6,712,380	6	385,408	3	337,309
Arizona								
Arizona State University	3	169,622	3	169,622	—	—	—	—
Northern Arizona University	1	80,917	1	80,917	—	—	—	—
University of Arizona	26	4,137,598	21	3,514,881	4	188,956	1	433,761
Total, Arizona	30	4,388,137	25	3,765,420	4	188,956	1	433,761
Arkansas								
University of Arkansas Medical Sciences	5	183,251	4	163,211	1	20,040	—	—
Total, Arkansas	5	183,251	4	163,211	1	20,040	—	—
California								
Advanced Blood Component Technology, Inc.	1	56,000	1	56,000	—	—	—	—
Beckman Research Institute/ City of Hope	3	437,633	3	437,633	—	—	—	—
Berkeley Health Department	1	51,110	1	51,110	—	—	—	—
Bio-Science Laboratories	1	112,460	—	—	—	—	1	112,460
California Institute of Technology	6	714,018	5	696,282	1	17,736	—	—
California Public Health Foundation	1	98,714	1	98,714	—	—	—	—
California State Department of Health Services	2	108,479	1	59,496	—	—	1	48,983
California State University, Fullerton	1	62,771	1	62,771	—	—	—	—
California State University, Los Angeles	1	48,999	1	48,999	—	—	—	—
Cedars-Sinai Medical Center	3	1,560,110	3	1,560,110	—	—	—	—
Charles R. Drew Postgraduate Medical School	2	143,633	2	143,633	—	—	—	—
Children's Hospital Medical Center of Northern California	3	499,916	2	313,660	—	—	1	186,256

INSTITUTION	TOTALS		RESEARCH GRANTS		RESEARCH TRAINING AND DEVELOPMENT		CONTRACTS	
	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.
California (Cont.)								
Children's Hospital of Los Angeles	3	217,368	3	217,368	—	—	—	—
City of Hope National Medical Center	1	65,558	1	65,558	—	—	—	—
Eureka Laboratories, Inc.	1	48,000	1	48,000	—	—	—	—
IOX Assessment Associates	1	46,837	1	46,837	—	—	—	—
J. David Gladstone Foundation	4	315,211	4	315,211	—	—	—	—
Kaiser Foundation Research Institute	1	56,274	1	56,274	—	—	—	—
La Jolla Cancer Research Foundation	1	121,996	1	121,996	—	—	—	—
Loma Linda University	4	511,874	3	349,762	—	—	1	162,112
Los Angeles County Harbor- UCLA Medical Center	8	637,859	5	505,694	3	132,165	—	—
Medical Research Institute	4	364,795	4	364,795	—	—	—	—
Mount Zion Hospital and Medical Center	1	224,912	1	224,912	—	—	—	—
Nimbus, Inc.	2	1,134,958	1	62,581	—	—	1	1,072,377
Novacor Medical Corporation	2	1,094,148	—	—	—	—	2	1,094,148
Pacific Medical Center	1	206,386	1	206,386	—	—	—	—
Palo Alto Medical Research Foundation	2	110,566	2	110,566	—	—	—	—
Rees-Stealy Research Foundation	1	106,960	1	106,960	—	—	—	—
San Diego State University	1	42,444	1	42,444	—	—	—	—
Scripps Clinic and Research Foundation	20	3,921,039	18	3,759,130	2	161,909	—	—
SRI International	7	1,053,608	5	676,046	—	—	2	377,562
Stanford University	41	12,759,445	25	9,741,525	13	658,994	3	2,358,926
Thoratec Laboratories Corporation	2	172,295	—	—	—	—	2	172,295
U.S. Southwest Fisheries Center	1	17,736	—	—	1	17,736	—	—
University of California, Berkeley	9	2,651,953	5	2,437,815	4	214,138	—	—
University of California, Davis	20	1,529,456	16	1,381,341	3	83,751	1	64,364
University of California, Irvine	11	906,887	11	906,887	—	—	—	—
University of California, Los Angeles	38	5,645,612	34	5,370,626	4	274,986	—	—
University of California, Riverside	1	47,295	1	47,295	—	—	—	—
University of California, San Diego	54	9,185,069	41	7,593,620	12	723,045	1	868,404
University of California, San Francisco	80	15,660,695	66	14,303,202	12	997,722	2	359,771
University of Southern California	14	3,061,749	12	3,047,686	2	14,063	—	—
Total, California	361	65,812,828	286	55,638,925	57	3,296,245	18	6,877,658

INSTITUTION	TOTALS		RESEARCH GRANTS		RESEARCH TRAINING AND DEVELOPMENT		CONTRACTS	
	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.
Colorado								
Colorado State University	4	372,223	4	372,223	—	—	—	—
National Jewish Hospital and Research Center	10	1,556,514	10	1,556,514	—	—	—	—
University of Colorado, Boulder . .	2	142,415	2	142,415	—	—	—	—
University of Colorado Health Sciences Center	26	2,597,383	20	2,248,360	6	349,023	—	—
Total, Colorado	42	4,668,535	36	4,319,512	6	349,023	—	—
Connecticut								
John B. Pierce Foundation of Connecticut	7	608,685	7	608,685	—	—	—	—
University of Connecticut Health Center	22	2,138,259	20	2,066,514	2	71,745	—	—
University of Connecticut, Storrs	2	146,803	2	146,803	—	—	—	—
Yale University	40	4,198,484	27	3,564,955	10	454,431	3	179,098
Total, Connecticut	71	7,092,231	56	6,386,957	12	526,176	3	179,098
Delaware								
University of Delaware	2	137,312	2	137,312	—	—	—	—
Total, Delaware	2	137,312	2	137,312	—	—	—	—
District of Columbia								
American National Red Cross . . .	6	648,662	6	648,662	—	—	—	—
Children's Hospital National Medical Center	2	172,048	2	172,048	—	—	—	—
George Washington University . . .	9	1,635,705	5	698,055	—	—	4	937,650
Georgetown University	16	1,679,116	14	1,564,620	2	114,496	—	—
Howard University	8	2,473,322	4	2,277,956	3	47,775	1	147,591
National Academy of Sciences . . .	1	124,995	—	—	—	—	1	124,995
U.S. Department of Health and Human Services*	1	282,000	—	—	—	—	1	282,000
U.S. National Aeronautics and Space Administration	1	193,650	—	—	—	—	1	193,650
Total, District of Columbia . . .	44	7,209,498	31	5,361,341	5	162,271	8	1,685,886
Florida								
Eckerd College	1	116,133	1	116,133	—	—	—	—
Florida Agricultural and Mechanical University	1	55,613	1	55,613	—	—	—	—
Miami Heart Institute	3	321,697	2	99,088	—	—	1	222,609
Mount Sinai Medical Center	5	398,479	5	398,479	—	—	—	—
Pathfinder Enterprises	1	54,285	1	54,285	—	—	—	—
University of Florida	23	1,701,751	19	1,608,299	4	93,452	—	—
University of Miami	29	3,055,338	23	2,327,061	5	348,080	1	380,197
University of South Florida	14	873,885	14	873,885	—	—	—	—
Total, Florida	77	6,577,181	66	5,532,843	9	441,532	2	602,806

* Interagency Agreement with CDC, Atlanta, Georgia.

INSTITUTION	TOTALS		RESEARCH GRANTS		RESEARCH TRAINING AND DEVELOPMENT		CONTRACTS	
	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.
Georgia								
Albany State College	1	40,941	1	40,941	—	—	—	—
Atlanta University Center	1	185,748	1	185,748	—	—	—	—
Emory University	10	1,249,566	8	1,216,076	2	33,490	—	—
Evans County Health Department	1	47,169	1	47,169	—	—	—	—
Fort Valley State College	1	259,381	1	259,381	—	—	—	—
Georgia Department of Human Resources	1	797,407	—	—	—	—	1	797,407
Georgia Institute of Technology	4	404,232	4	404,232	—	—	—	—
Medical College of Georgia	9	1,913,279	9	1,913,279	—	—	—	—
Mercer University, Macon	2	112,527	2	112,527	—	—	—	—
U.S. Centers for Disease Control	4	679,000	—	—	—	—	4	679,000
University of Georgia	3	268,969	3	268,969	—	—	—	—
Total, Georgia	37	5,958,219	30	4,448,322	2	33,490	5	1,476,407
Hawaii								
Kapiolani-Children's Medical Center	1	173,155	1	173,155	—	—	—	—
Kuakini Medical Center	2	730,920	1	17,058	—	—	1	713,862
Queen's Medical Center	1	85,015	1	85,015	—	—	—	—
University of Hawaii, Manoa	1	23,726	1	23,726	—	—	—	—
Total, Hawaii	5	1,012,816	4	298,954	—	—	1	713,862
Illinois								
American Dental Association Health Foundation	1	89,901	1	89,901	—	—	—	—
Cell Analysis Systems, Inc.	1	56,000	1	56,000	—	—	—	—
Chicago Heart Association	1	238,489	1	238,489	—	—	—	—
Children's Memorial Hospital	1	69,362	1	69,362	—	—	—	—
Loyola University Medical Center	10	781,144	10	781,144	—	—	—	—
Loyola University of Chicago	2	118,923	2	118,923	—	—	—	—
Michael Reese Hospital and Medical Center	10	1,334,882	9	968,414	—	—	1	366,468
Northwestern University	30	2,727,424	28	2,710,384	2	17,040	—	—
Rush University	5	451,278	4	410,386	1	40,892	—	—
Rush-Presbyterian-St. Luke's Medical Center	2	53,284	2	53,284	—	—	—	—
Southern Illinois University School of Medicine	2	138,157	2	138,157	—	—	—	—
U.S. Veterans Administration Medical Center	2	71,023	2	71,023	—	—	—	—
University of Chicago	28	8,074,458	26	7,682,278	2	392,180	—	—
University of Health Sciences/Chicago Medical School	2	289,759	2	289,759	—	—	—	—
University of Illinois, Chicago	16	3,271,480	14	3,160,681	1	17,736	1	93,063
University of Illinois, Urbana-Champaign	12	999,415	12	999,415	—	—	—	—
Total, Illinois	125	18,764,979	117	17,837,600	6	467,848	2	459,531

INSTITUTION	TOTALS		RESEARCH GRANTS		RESEARCH TRAINING AND DEVELOPMENT		CONTRACTS	
	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.
Indiana								
Indiana University-Purdue University, Indianapolis	24	3,264,020	22	3,118,148	2	145,872	—	—
Indiana University, Bloomington	5	436,929	5	436,929	—	—	—	—
Indianapolis Center for Advanced Research	2	167,143	2	167,143	—	—	—	—
Purdue University, West Lafayette	7	609,421	6	537,355	1	72,066	—	—
University of Notre Dame	3	323,808	3	323,808	—	—	—	—
Total, Indiana	41	4,801,321	38	4,583,383	3	217,938	—	—
Iowa								
Iowa State University of Science and Technology	1	56,038	1	56,038	—	—	—	—
University of Iowa	54	8,020,091	44	6,729,882	9	609,429	1	680,780
Total, Iowa	55	8,076,129	45	6,785,920	9	609,429	1	680,780
Kansas								
Kansas State University	1	105,176	1	105,176	—	—	—	—
University of Kansas, College of Health Sciences and Hospital	4	349,253	3	332,213	1	17,040	—	—
University of Kansas, Lawrence	2	150,789	2	150,789	—	—	—	—
Wichita State University	1	26,443	1	26,443	—	—	—	—
Total, Kansas	8	631,661	7	614,621	1	17,040	—	—
Kentucky								
University of Kentucky	10	915,841	10	915,841	—	—	—	—
University of Louisville	3	81,350	2	62,114	1	19,236	—	—
Total, Kentucky	13	997,191	12	977,955	1	19,236	—	—
Louisiana								
Alton Ochsner Medical Foundation	3	190,695	3	190,695	—	—	—	—
Louisiana State University Agricultural and Medical College, Baton Rouge	2	163,625	2	163,625	—	—	—	—
Louisiana State University Medical Center, New Orleans	17	4,419,875	15	4,262,390	2	157,485	—	—
Louisiana State University Medical Center, Shreveport	7	354,654	7	354,654	—	—	—	—
Louisiana Technological University	1	76,510	1	76,510	—	—	—	—
Tulane University of Louisiana	12	2,038,480	9	1,858,807	3	179,673	—	—
Xavier University of Louisiana	1	147,002	1	147,002	—	—	—	—
Total, Louisiana	43	7,390,841	38	7,053,683	5	337,158	—	—

INSTITUTION	TOTALS		RESEARCH GRANTS		RESEARCH TRAINING AND DEVELOPMENT		CONTRACTS	
	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.
Maine								
Jackson Laboratory	1	135,470	1	135,470	—	—	—	—
Maine State Department of Human Services	1	586,631	—	—	—	—	1	586,631
Total, Maine	2	722,101	1	135,470	—	—	1	586,631
Maryland								
American Association of Immunologists	1	15,000	1	15,000	—	—	—	—
American Physiological Society	1	38,400	1	38,400	—	—	—	—
Chesapeake Physicians Professional Association	1	106,357	1	106,357	—	—	—	—
Federation of American Society for Experimental Biology	1	1,000	1	1,000	—	—	—	—
International Society for Experimental Hematology	1	10,000	1	10,000	—	—	—	—
Johns Hopkins University	65	11,058,867	51	8,927,175	12	1,169,391	2	962,301
Litton Bionetics	1	275,126	—	—	—	—	1	275,126
Maryland Medical Research Institute	2	362,948	—	—	—	—	2	362,948
Prospect Associates	1	364,049	—	—	—	—	1	364,049
U.S. Agricultural Research Center	1	194,000	—	—	—	—	1	194,000
U.S. Bureau of the Census*	1	500,000	—	—	—	—	1	500,000
U.S. Health Resources and Services Administration*	1	300,000	—	—	—	—	1	300,000
U.S. National Center for Health Statistics*	1	101,500	—	—	—	—	1	101,500
U.S. National Institutes of Health†	16	476,266	—	—	11	174,986	5	301,280
U.S. Public Health Service Public Advisory Groups‡	28	2,359,000	28	2,359,000	—	—	—	—
U.S. Uniformed Services University of Health Sciences	7	238,005	5	221,074	2	16,931	—	—
University of Maryland, Baltimore	11	1,838,148	10	1,726,478	—	—	1	111,670
University of Maryland, Baltimore County	1	79,849	1	79,849	—	—	—	—
University of Maryland, College Park	1	24,124	—	—	1	24,124	—	—
Total, Maryland	142	18,342,639	100	13,484,333	26	1,385,432	16	3,472,874
Massachusetts								
American Institutes for Research	1	132,361	1	132,361	—	—	—	—
Applied Biomedical Corporation	2	1,244,298	1	133,921	—	—	1	1,110,377

* Interagency Agreements.

† Intra-agency Agreements.

‡ Scientific Evaluation.

INSTITUTION	TOTALS		RESEARCH GRANTS		RESEARCH TRAINING AND DEVELOPMENT		CONTRACTS	
	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.
Massachusetts (Cont.)								
Beth Israel Hospital	19	1,964,743	16	1,797,681	2	112,086	1	54,976
Biomechanics Institute, Inc.	2	172,179	2	172,179	—	—	—	—
Boston Biomedical Research Institute	10	1,260,350	8	1,179,632	2	80,718	—	—
Boston City Hospital	2	1,144,680	2	1,144,680	—	—	—	—
Boston Health and Hospitals Department	1	81,246	—	—	—	—	1	81,246
Boston University	41	13,142,012	32	9,771,002	6	566,243	3	2,804,767
Brandeis University	2	17,736	—	—	2	17,736	—	—
Brigham and Women's Hospital	55	5,913,203	44	5,377,617	11	535,586	—	—
Center for Blood Research	5	1,741,212	5	1,741,212	—	—	—	—
Children's Hospital Medical Center	31	3,812,708	26	3,351,560	4	331,684	1	129,464
Clinical Data, Inc.	1	53,550	—	—	—	—	1	53,550
College Mental Health Center of Boston	1	131,493	1	131,493	—	—	—	—
Dana-Farber Cancer Institute	2	118,112	2	118,112	—	—	—	—
EIC Laboratories, Inc.	1	46,711	1	46,711	—	—	—	—
Giner, Inc.	2	99,793	2	99,793	—	—	—	—
Harvard University	60	11,367,620	40	8,556,140	17	967,197	3	1,844,283
Industrial and Biomedical Sensors Corporation	1	31,923	1	31,923	—	—	—	—
Integrated Genetics, Inc.	1	52,120	1	52,120	—	—	—	—
Massachusetts General Hospital	43	6,374,005	32	5,781,889	10	546,568	1	45,548
Massachusetts Hospital Association	1	21,780	—	—	1	21,780	—	—
Massachusetts Institute of Technology	10	1,518,826	8	1,480,198	2	38,628	—	—
New England Deaconess Hospital	4	507,514	3	279,799	—	—	1	227,715
New England Medical Center Hospital	14	1,557,064	10	1,299,296	4	257,768	—	—
Northeastern University	3	309,607	3	309,607	—	—	—	—
Southeastern Massachusetts University	1	61,126	1	61,126	—	—	—	—
St. Elizabeth's Hospital of Boston	7	853,059	6	648,568	—	—	1	204,491
Thermo Electron Corporation	3	2,022,980	—	—	—	—	3	2,022,980
Tufts University	7	790,629	6	767,913	1	22,716	—	—
University Hospital	5	555,669	4	520,116	—	—	1	35,553
University of Massachusetts, Amherst	2	201,481	2	201,481	—	—	—	—
University of Massachusetts Medical School	9	739,437	7	678,043	1	20,892	1	40,502
Worcester Foundation for Experimental Biology	1	131,288	1	131,288	—	—	—	—
Total, Massachusetts	350	58,172,515	268	45,997,461	63	3,519,602	19	8,655,452

INSTITUTION	TOTALS		RESEARCH GRANTS		RESEARCH TRAINING AND DEVELOPMENT		CONTRACTS	
	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.
Michigan								
HEM Engineering Company	1	56,000	1	56,000	—	—	—	—
Henry Ford Hospital	9	1,298,258	8	1,253,676	—	—	1	44,582
Michigan Department of Public Health	1	954,425	—	—	—	—	1	954,425
Michigan State University	27	1,831,976	21	1,551,749	6	280,227	—	—
Oakland University	1	46,483	1	46,483	—	—	—	—
Proteins International	1	45,968	1	45,968	—	—	—	—
Sinai Hospital of Detroit	1	105,333	—	—	—	—	1	105,333
University of Michigan, Ann Arbor	33	4,100,699	27	3,774,984	5	284,960	1	40,755
Wayne State University	9	1,786,089	9	1,786,089	—	—	—	—
Total, Michigan	83	10,225,231	68	8,514,949	11	565,187	4	1,145,095
Minnesota								
Fond Du Lac Reservation Business Committee	1	30,452	1	30,452	—	—	—	—
Mayo Foundation	35	7,051,696	26	6,287,179	7	389,612	2	374,905
Mount Sinai Hospital	2	509,195	2	509,195	—	—	—	—
United Hospitals	1	150,130	1	150,130	—	—	—	—
University of Minnesota, Duluth	1	39,667	1	39,667	—	—	—	—
University of Minnesota, Minneapolis-St. Paul	77	19,507,907	53	15,825,528	21	1,049,270	3	2,633,109
Total, Minnesota	117	27,289,047	84	22,842,151	28	1,438,882	5	3,008,014
Mississippi								
Alcorn State University	1	142,363	1	142,363	—	—	—	—
University of Mississippi	1	513,215	1	513,215	—	—	—	—
University of Mississippi Medical Center	14	1,756,269	11	1,601,081	2	60,301	1	94,887
University of Southern Mississippi	1	109,237	1	109,237	—	—	—	—
Total, Mississippi	17	2,521,084	14	2,365,896	2	60,301	1	94,887
Missouri								
Jewish Hospital of St. Louis	6	1,164,973	6	1,164,973	—	—	—	—
Kirksville College of Osteopathic Medicine	1	156,412	1	156,412	—	—	—	—
Lincoln University	1	50,191	1	50,191	—	—	—	—
St. Louis University	18	2,118,850	15	1,779,270	2	155,030	1	184,550
St. Luke's Hospital of Kansas City	1	70,227	1	70,227	—	—	—	—
University of Missouri, Columbia	19	1,467,440	15	1,287,770	4	179,670	—	—
University of Missouri, Rolla	1	76,739	1	76,739	—	—	—	—
Washington University	43	9,113,651	33	7,256,088	6	682,171	4	1,175,392
Total, Missouri	90	14,218,483	73	11,841,670	12	1,016,871	5	1,359,942

INSTITUTION	TOTALS		RESEARCH GRANTS		RESEARCH TRAINING AND DEVELOPMENT		CONTRACTS	
	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.
Nebraska								
Creighton University	3	258,045	3	258,045	—	—	—	—
University of Nebraska, Lincoln	2	174,838	2	174,838	—	—	—	—
University of Nebraska Medical Center	7	442,374	7	442,374	—	—	—	—
Total, Nebraska	12	875,257	12	875,257	—	—	—	—
New Hampshire								
Dartmouth College	16	1,363,959	14	1,270,828	2	93,131	—	—
Total, New Hampshire	16	1,363,959	14	1,270,828	2	93,131	—	—
New Jersey								
Atmospheric Health Sciences, Inc.	1	56,000	1	56,000	—	—	—	—
Beth Israel Hospital	1	55,005	1	55,005	—	—	—	—
Deborah Heart and Lung Center	1	84,630	1	84,630	—	—	—	—
Newark Beth Israel Medical Center	2	100,768	2	100,768	—	—	—	—
Princeton University	2	193,274	2	193,274	—	—	—	—
Rutgers Medical School	8	714,537	7	696,801	1	17,736	—	—
Rutgers University, New Brunswick	1	115,886	1	115,886	—	—	—	—
University of Medicine and Dentistry of New Jersey	15	1,819,329	13	1,719,165	2	100,164	—	—
Total, New Jersey	31	3,139,429	28	3,021,529	3	117,900	—	—
New Mexico								
Lovelace Medical Center	3	231,974	3	231,974	—	—	—	—
New Mexico State University, Las Cruces	1	51,635	1	51,635	—	—	—	—
U.S. Veterans Administration Medical Center	1	10,600	—	—	—	—	1	10,600
University of Albuquerque	1	40,645	1	40,645	—	—	—	—
University of New Mexico, Albuquerque	8	604,111	7	603,384	1	727	—	—
Total, New Mexico	14	938,965	12	927,638	1	727	1	10,600
New York								
Albany Medical College	14	2,218,201	11	1,983,868	3	234,333	—	—
American Health Foundation	2	965,734	2	965,734	—	—	—	—
Associated Universities, Inc.— Brookhaven National Laboratory	2	255,966	2	255,966	—	—	—	—
Beth Israel Medical Center	1	205,444	1	205,444	—	—	—	—
Catholic Medical Center, Brooklyn Queens Nursing	1	57,234	1	57,234	—	—	—	—
Children's Hospital	2	249,851	2	249,851	—	—	—	—

INSTITUTION	TOTALS		RESEARCH GRANTS		RESEARCH TRAINING AND DEVELOPMENT		CONTRACTS	
	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.
New York (Cont.)								
City College of New York	4	347,273	4	347,273	—	—	—	—
Cold Spring Harbor Laboratory	1	154,919	1	154,919	—	—	—	—
Columbia University	59	18,223,402	47	17,350,942	10	689,723	2	182,737
Cornell University, Ithaca	10	1,131,500	8	1,055,852	2	75,648	—	—
Cornell University Medical Center, New York	25	7,132,153	19	6,650,014	5	462,982	1	19,157
Downstate Medical Center	15	1,354,093	14	1,307,492	1	46,601	—	—
Health Insurance Plan of Greater New York	1	130,369	1	130,369	—	—	—	—
Hunter College	2	71,304	2	71,304	—	—	—	—
Institute for Basic Research in Developmental Disabilities	1	71,116	1	71,116	—	—	—	—
Jewish Hospital and Medical Center of Brooklyn	1	462,508	—	—	—	—	1	462,508
Mary Imogene Bassett Hospital	1	47,433	1	47,433	—	—	—	—
Masonic Medical Research Laboratory, Inc.	2	322,824	2	322,824	—	—	—	—
Medgar Evers College	1	68,109	1	68,109	—	—	—	—
Memorial Hospital for Cancer-Allied Diseases	1	45,804	1	45,804	—	—	—	—
Montefiore Hospital and Medical Center	10	1,914,912	8	1,822,115	1	70,333	1	22,464
Mount Sinai Medical Center	1	110,203	1	110,203	—	—	—	—
Mount Sinai School of Medicine	19	3,389,769	17	3,272,515	2	117,254	—	—
New York Academy of Sciences	1	20,080	1	20,080	—	—	—	—
New York Blood Center	6	3,459,891	3	2,271,976	1	16,000	2	1,171,915
New York Medical College	15	1,722,079	15	1,722,079	—	—	—	—
New York State Department of Health	4	390,462	4	390,462	—	—	—	—
New York University	21	2,679,034	20	2,550,056	1	128,978	—	—
Queens College	1	111,684	1	111,684	—	—	—	—
Rensselaer Polytechnic Institute	2	192,538	2	192,538	—	—	—	—
Rockefeller University	14	1,317,045	12	1,280,109	2	36,936	—	—
Roswell Park Memorial Institute	3	381,064	3	381,064	—	—	—	—
Sloan-Kettering Institute for Cancer Research	2	243,224	2	243,224	—	—	—	—
St. Luke's-Roosevelt Hospital Center	1	61,544	1	61,544	—	—	—	—
St. Luke's-Roosevelt Institute for Health Sciences	2	280,676	2	280,676	—	—	—	—
State University of New York, Binghamton	1	39,918	1	39,918	—	—	—	—
State University of New York, Stony Brook	18	1,518,174	18	1,518,174	—	—	—	—
State University of New York, Albany	3	311,364	3	311,364	—	—	—	—

INSTITUTION	TOTALS		RESEARCH GRANTS		RESEARCH TRAINING AND DEVELOPMENT		CONTRACTS	
	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.
New York (Cont.)								
State University of New York,								
Buffalo	20	2,676,737	20	2,676,737	—	—	—	—
Syracuse University	3	334,222	3	334,222	—	—	—	—
Trudeau Institute	1	146,945	1	146,945	—	—	—	—
U.S. Department of Energy—								
Brookhaven	1	210,688	—	—	—	—	1	210,688
University of Rochester	47	5,510,481	38	4,828,598	7	365,367	2	316,516
Upstate Medical Center	7	463,270	6	444,802	1	18,468	—	—
Yeshiva University	37	6,687,237	33	6,547,305	4	139,932	—	—
Total, New York	386	67,688,478	336	62,899,938	40	2,402,555	10	2,385,985
North Carolina								
Atlantic Medical Systems, Inc.	1	43,369	1	43,369	—	—	—	—
Duke University	73	10,734,054	61	9,516,631	9	829,976	3	387,447
East Carolina University	1	75,137	1	75,137	—	—	—	—
North Carolina State University,								
Raleigh	1	44,318	1	44,318	—	—	—	—
Research Triangle Institute	2	854,493	—	—	—	—	2	854,493
University of North Carolina,								
Chapel Hill	42	12,746,651	33	5,400,668	7	480,563	2	6,865,420
University of North Carolina,								
Charlotte	1	50,034	1	50,034	—	—	—	—
Wake Forest University	25	4,403,488	19	3,443,905	3	200,848	3	758,735
Western Carolina University	1	56,330	1	56,330	—	—	—	—
Total, North Carolina	147	29,007,874	118	18,630,392	19	1,511,387	10	8,866,095
North Dakota								
North Dakota State University	2	146,453	2	146,453	—	—	—	—
University of North Dakota	2	62,670	2	62,670	—	—	—	—
Total, North Dakota	4	209,123	4	209,123	—	—	—	—
Ohio								
Battelle Memorial Institute	1	275,323	1	275,323	—	—	—	—
Case Western Reserve								
University	35	3,766,731	32	3,451,406	3	315,325	—	—
Children's Hospital								
Medical Center	5	1,573,820	4	1,525,695	1	48,125	—	—
Christ Hospital	1	81,275	1	81,275	—	—	—	—
Cleveland Clinic Foundation	18	3,780,260	15	3,601,495	1	77,622	2	101,143
Kent State University	1	39,395	1	39,395	—	—	—	—
Medical College of Ohio, Toledo ..	6	652,854	5	582,550	1	70,304	—	—
Mount Sinai Hospital of								
Cleveland	3	439,494	3	439,494	—	—	—	—
Northeastern Ohio Universities								
College of Medicine	2	99,198	2	99,198	—	—	—	—
Ohio State University	13	1,224,136	12	1,211,811	—	—	1	12,325
Ohio University, Athens	2	93,343	2	93,343	—	—	—	—

INSTITUTION	TOTALS		RESEARCH GRANTS		RESEARCH TRAINING AND DEVELOPMENT		CONTRACTS	
	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.
Ohio (Cont.)								
University of Cincinnati	33	5,491,788	26	4,225,484	6	362,674	1	903,630
University of Toledo	2	87,436	2	87,436	—	—	—	—
Wright State University	2	230,676	2	230,676	—	—	—	—
Total, Ohio	124	17,835,729	108	15,944,581	12	874,050	4	1,017,098
Oklahoma								
Oklahoma Medical Research Foundation	8	1,858,889	7	976,135	—	—	1	882,754
Oral Roberts University	2	94,793	2	94,793	—	—	—	—
University of Oklahoma Health Sciences Center	19	1,464,418	14	1,137,583	4	149,110	1	177,725
Total, Oklahoma	29	3,418,100	23	2,208,511	4	149,110	2	1,060,479
Oregon								
Kaiser Services Research Center	1	118,064	1	118,064	—	—	—	—
Linfield College	1	59,158	1	59,158	—	—	—	—
Medical Research Foundation of Oregon	2	213,323	2	213,323	—	—	—	—
Oregon Health Division	1	80,123	1	80,123	—	—	—	—
Oregon Health Sciences University	18	2,152,918	15	1,921,777	3	231,141	—	—
Oregon State University	4	365,842	4	365,842	—	—	—	—
University of Oregon	3	267,865	3	267,865	—	—	—	—
Total, Oregon	30	3,257,293	27	3,026,152	3	231,141	—	—
Pennsylvania								
Allegheny-Singer Research Corporation	1	72,242	1	72,242	—	—	—	—
Carnegie-Mellon University	2	466,196	2	466,196	—	—	—	—
Children's Hospital of Philadelphia	11	997,541	9	817,341	1	68,385	1	111,815
Drexel University	2	119,283	2	119,283	—	—	—	—
Dymax Corporation	1	55,200	1	55,200	—	—	—	—
Franklin and Marshall College	1	24,488	1	24,488	—	—	—	—
Graduate Hospital	8	1,049,730	6	999,494	2	50,236	—	—
Hahnemann University	7	629,133	6	611,397	1	17,736	—	—
Lankenau Hospital	2	49,479	2	49,479	—	—	—	—
Medical College of Pennsylvania	4	1,371,352	3	1,258,015	1	113,337	—	—
Monell Chemical Senses Center	1	126,774	1	126,774	—	—	—	—
Pennsylvania State University-Hershey Medical Center	26	3,136,551	22	2,935,417	4	201,134	—	—
Pennsylvania State University, University Park	8	641,918	8	641,918	—	—	—	—
Temple University	26	4,282,985	19	3,897,677	7	385,308	—	—

INSTITUTION	TOTALS		RESEARCH GRANTS		RESEARCH TRAINING AND DEVELOPMENT		CONTRACTS	
	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.
Pennsylvania (Cont.)								
Thomas Jefferson University	24	2,457,294	19	2,064,658	4	154,822	1	237,814
University City Science Center	4	608,158	4	608,158	—	—	—	—
University of Pennsylvania	81	15,551,251	66	14,196,232	13	808,808	2	546,211
University of Pittsburgh	27	3,385,371	20	2,286,068	4	373,389	3	725,914
Wistar Institute of Anatomy and Biology	2	130,886	2	130,886	—	—	—	—
Total, Pennsylvania	238	35,155,832	194	31,360,923	37	2,173,155	7	1,621,754
Rhode Island								
Brown University	2	308,785	2	308,785	—	—	—	—
Gordon Research Conferences	6	33,531	6	33,531	—	—	—	—
Memorial Hospital	6	2,046,865	6	2,046,865	—	—	—	—
Miriam Hospital	5	477,328	5	477,328	—	—	—	—
Rhode Island Hospital	4	438,262	2	280,590	—	—	2	157,672
Total, Rhode Island	23	3,304,771	21	3,147,099	—	—	2	157,672
South Carolina								
Benedict College	1	77,560	1	77,560	—	—	—	—
Medical University of South Carolina	17	2,032,740	15	1,952,444	2	80,296	—	—
University of South Carolina, Columbia	7	474,225	7	474,225	—	—	—	—
Total, South Carolina	25	2,584,525	23	2,504,229	2	80,296	—	—
Tennessee								
Meharry Medical College	1	159,054	1	159,054	—	—	—	—
Memphis State University	1	58,885	1	58,885	—	—	—	—
Oak Ridge Associated Universities	1	95,691	1	95,691	—	—	—	—
Oak Ridge National Laboratory	1	92,240	1	92,240	—	—	—	—
St. Jude Children's Research Hospital	1	90,243	1	90,243	—	—	—	—
University of Tennessee Center of Health Sciences	31	3,009,910	28	2,727,919	2	85,087	1	196,904
University of Tennessee, Knoxville	4	302,900	3	243,872	1	59,028	—	—
Vanderbilt University	33	6,241,310	26	5,795,664	6	299,515	1	146,131
Total, Tennessee	73	10,050,233	62	9,263,568	9	443,630	2	343,035
Texas								
American Heart Association	1	11,166	1	11,166	—	—	—	—
Baylor College of Medicine	52	7,396,677	43	5,613,025	4	171,897	5	1,611,755
Baylor University	1	81,786	1	81,786	—	—	—	—
Incarnate Word College	1	144,739	1	144,739	—	—	—	—
Prairie View Agricultural and Mechanical University	1	86,504	1	86,504	—	—	—	—

INSTITUTION	TOTALS		RESEARCH GRANTS		RESEARCH TRAINING AND DEVELOPMENT		CONTRACTS	
	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.
Texas (Cont.)								
Rice University	9	1,060,931	9	1,060,931	—	—	—	—
Southern Methodist University . . .	1	12,524	1	12,524	—	—	—	—
Southwest Foundation for Research and Education	9	3,343,268	4	1,893,253	3	87,740	2	1,362,275
St. Luke's Episcopal Hospital	1	852,825	—	—	—	—	1	852,825
Texas Agricultural and Mechanical University, College Station	7	404,590	4	348,418	3	56,172	—	—
Texas College of Osteopathic Medicine	3	158,120	2	133,396	1	24,724	—	—
Texas Tech University	9	386,579	7	305,647	2	80,932	—	—
University of Houston, Houston . . .	7	437,792	5	312,472	2	125,320	—	—
University of Texas, Austin	1	85,481	1	85,481	—	—	—	—
University of Texas Health Science Center, Dallas	59	8,636,022	49	7,366,778	7	471,443	3	797,801
University of Texas Health Science Center, Houston	16	2,344,431	11	943,169	2	39,360	3	1,361,902
University of Texas Health Science Center, San Antonio	34	3,962,244	30	3,675,012	4	287,232	—	—
University of Texas Medical Branch, Galveston	22	1,939,134	21	1,920,666	1	18,468	—	—
Total, Texas	234	31,344,813	191	23,994,967	29	1,363,288	14	5,986,558
Utah								
Latter-day Saints Hospital	1	34,020	1	34,020	—	—	—	—
Salt Lake Clinic Research Foundation	1	150,520	—	—	—	—	1	150,520
Technical Research Associates, Inc.	1	48,862	1	48,862	—	—	—	—
University of Utah	27	4,684,339	26	4,621,784	1	62,555	—	—
Total, Utah	30	4,917,741	28	4,704,666	1	62,555	1	150,520
Vermont								
University of Vermont and State Agricultural College	20	3,310,303	18	3,289,227	2	21,076	—	—
Total, Vermont	20	3,310,303	18	3,289,227	2	21,076	—	—
Virginia								
Eastern Virginia Medical Authority	1	36,574	1	36,574	—	—	—	—
Eastern Virginia Medical School	2	160,179	2	160,179	—	—	—	—
Evaluation Technologies	1	19,612	—	—	—	—	1	19,612
Flow Laboratories	1	35,302	—	—	—	—	1	35,302
JRB Associates	1	127,077	—	—	—	—	1	127,077
Kappa Systems	2	3,560,531	—	—	—	—	2	3,560,531
Meloy Laboratories	3	329,944	1	137,871	—	—	2	192,073
National Capitol Systems, Inc. . . .	1	243,254	—	—	—	—	1	243,254

INSTITUTION	TOTALS		RESEARCH GRANTS		RESEARCH TRAINING AND DEVELOPMENT		CONTRACTS	
	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.
Virginia (Cont.)								
University of Virginia, Charlottesville	38	3,111,435	29	2,735,299	9	376,136	—	—
Virginia Commonwealth University	28	3,343,172	22	2,923,271	5	288,362	1	131,539
Total, Virginia	78	10,967,080	55	5,993,194	14	664,498	9	4,309,388
Washington								
Common Sensing, Inc.	1	53,536	1	53,536	—	—	—	—
Fred Hutchinson Cancer Research Center	2	90,711	1	72,243	1	18,468	—	—
Genetic Systems Corporation ...	1	73,471	1	73,471	—	—	—	—
Institute of Applied Physiology/Medicine	2	219,852	2	219,852	—	—	—	—
Lawrence Medical Systems, Inc.	1	55,934	1	55,934	—	—	—	—
Precision Medical Technology ...	1	56,600	1	56,600	—	—	—	—
Puget Sound Blood Center	4	333,003	4	333,003	—	—	—	—
University of Washington	84	15,379,037	65	12,474,455	15	991,124	4	1,913,458
Virginia Mason Research Center	2	134,393	2	134,393	—	—	—	—
Total, Washington	98	16,396,537	78	13,473,487	16	1,009,592	4	1,913,458
West Virginia								
Marshall University	1	38,903	1	38,903	—	—	—	—
West Virginia University	4	300,688	4	300,688	—	—	—	—
Total, West Virginia	5	339,591	5	339,591	—	—	—	—
Wisconsin								
Biochem International, Inc.	1	46,000	1	46,000	—	—	—	—
Blood Center of Southeastern Wisconsin	5	327,766	4	309,298	1	18,468	—	—
Marshfield Medical Foundation ...	2	174,963	1	131,697	—	—	1	43,266
Medical College of Wisconsin ...	26	2,402,040	23	2,264,754	3	137,286	—	—
Mount Sinai Medical Center	2	581,961	2	581,961	—	—	—	—
University of Wisconsin, Madison	34	3,087,749	31	2,745,361	2	27,813	1	314,575
Total, Wisconsin	70	6,620,479	62	6,079,071	6	183,567	2	357,841
Puerto Rico								
Catholic University of Puerto Rico	1	172,870	1	172,870	—	—	—	—
University of Puerto Rico Medical Sciences	2	60,983	1	42,467	1	18,516	—	—
University of Puerto Rico, Rio Piedras	1	67,435	1	67,435	—	—	—	—
Total, Puerto Rico	4	301,288	3	282,772	1	18,516	—	—
Total, United States	3,502	\$535,655,727	2,869	\$449,247,012	470	\$26,458,239	163	\$59,950,476

INSTITUTION	TOTALS		RESEARCH GRANTS		RESEARCH TRAINING AND DEVELOPMENT		CONTRACTS	
	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.
Australia								
Baker Medical Research Institute	1	32,847	—	—	1	32,847	—	—
Parramatta Hospitals— Westmead Centre	1	60,863	1	60,863	—	—	—	—
University of Melbourne	1	60,503	1	60,503	—	—	—	—
Total, Australia	3	154,213	2	121,366	1	32,847	—	—
Belgium								
Catholic University of Louvain ...	2	53,820	1	36,084	1	17,736	—	—
Total, Belgium	2	53,820	1	36,084	1	17,736	—	—
Canada								
Hospital for Sick Children	2	55,126	2	55,126	—	—	—	—
Montreal General Hospital	1	53,158	1	53,158	—	—	—	—
Montreal Heart Institute	1	74,271	—	—	—	—	1	74,271
University of British Columbia ...	1	86,309	1	86,309	—	—	—	—
University of Manitoba	2	179,711	1	40,565	—	—	1	139,146
University of Toronto	2	676,702	1	42,212	—	—	1	634,490
University of Western Ontario ...	1	18,468	—	—	1	18,468	—	—
Total, Canada	10	1,143,745	6	277,370	1	18,468	3	847,907
China								
Shanghai Children's Hospital ...	1	44,135	1	44,135	—	—	—	—
Total, China	1	44,135	1	44,135	—	—	—	—
Denmark								
University of Aarhus	1	71,764	1	71,764	—	—	—	—
Total, Denmark	1	71,764	1	71,764	—	—	—	—
Israel								
Hadassah University Hospital ...	3	468,892	2	133,034	—	—	1	335,858
Total, Israel	3	468,892	2	133,034	—	—	1	335,858
Italy								
University of Milan	1	26,190	1	26,190	—	—	—	—
Total, Italy	1	26,190	1	26,190	—	—	—	—
Romania								
Institute of Cellular Biology and Pathology	1	26,528	1	26,528	—	—	—	—
Total, Romania	1	26,528	1	26,528	—	—	—	—
Sweden								
Caroline Institute	1	567	—	—	1	567	—	—
Total, Sweden	1	567	—	—	1	567	—	—

INSTITUTION	TOTALS		RESEARCH GRANTS		RESEARCH TRAINING AND DEVELOPMENT		CONTRACTS	
	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.
United Kingdom								
St. Thomas Hospital	1	700	—	—	1	700	—	—
University of Leeds	1	21,780	—	—	1	21,780	—	—
University of London	2	19,787	—	—	2	19,787	—	—
Total, United Kingdom	4	42,267	—	—	4	42,267	—	—
Total, Foreign Countries	27	\$ 2,032,121	15	\$ 736,471	8	\$ 111,885	4	\$ 1,183,765
Total*	3,529	\$537,687,848	2,884	\$449,983,483	478	\$26,570,124	167	\$61,134,241

* The number of awards may not agree with other tables due to the method of counting supplements.

Note: The above contract figure includes research contracts for the Division of Intramural Research and the Office of the Director.

APPENDIX

TYPES OF RESEARCH GRANTS

Research Grants

Research Projects

Research Project Grants (R01): To support discrete and specific projects to be performed by one or several investigators in areas of the investigators' particular interests and competencies.

Research Program Projects (P01): To support broadly based, multidisciplinary, often long-term research projects that have specific major objectives or basic themes. A program project addresses a range of problems that have a central research focus in contrast to the narrower focus of a research project grant (R01). A program project is part of a system of activities directed toward a well-defined research program goal. Usually, a relatively large organized group of researchers conducts individual subprojects, the results of which help achieve objectives of the program project.

New Investigator Research Awards (R23): To support a basic or clinical research project of a newly trained investigator during the developmental stages of the investigator's career.

Small Business Innovation Research Grants (SBIR), Phase I (R43): To support projects, limited in time and amount, to establish the technical merit and feasibility of research and development ideas that may ultimately lead to commercial products or services. These grants were first awarded in fiscal year 1983.

Small Business Innovation Research Grants (SBIR), Phase II (R44): Research project support for ideas whose feasibility has been established in phase I and that are likely to result in commercially exploitable products or services. The first phase II awards will be made in fiscal year 1984.

Research Centers

Specialized Centers of Research, SCOR (P50): To support both basic and clinical research related to an Institute-identified theme. The spectrum of SCOR activities comprises multidisciplinary approaches to specific disease entities or biomedical problem areas. These grants differ from research program projects in

that they are in response to an announcement of programmatic needs of the Institute. Centers may be asked to perform additional studies because of urgently needed information or may serve as a regional or national resource for special purpose research.

Comprehensive Centers (P60): To support basic and clinical research and other research activities related to community needs, such as demonstration and education research. Such a center can be based in a university or other institution involved with research, and it can also involve other local resources. It is designed to foster biomedical research at fundamental and clinical levels; to initiate and expand community education and screening and counseling programs; and to educate health professionals concerning problems of diagnosis and treatment of specific diseases, such as sickle cell anemia.

Other Research-Related Grants

Research Career Programs

Special Research Career Emphasis (SERCA) in Diabetes Mellitus (K01): To support scientists who are committed to research related to the vascular aspects or sequelae of diabetes mellitus and who are in need of both advanced research training and additional experience.

Research Career Development Award, RCDA (K04): To foster the development of young scientists with outstanding research potential for careers of independent research in the sciences related to heart, lung, and blood diseases and blood resources.

Research Career Awards, RCA (K06): To assist institutions in supporting established investigators of high competency for the duration of their career. New grants are no longer awarded.

Academic Awards (K07): To create and encourage a stimulating approach to disease curricula that will attract quality students; foster academic career development of teacher-investigators; develop and implement multidisciplinary curricula; and strengthen existing programs. This award series includes the Preventive

Cardiology Award (PCA), the Transfusion Medicine Award (TMA), and the Pulmonary Academic Award (PAA). New grants are no longer awarded in the Pulmonary Academic Program.

Clinical Investigator Awards, CIA (K08): To provide opportunity for clinically trained physicians with demonstrated potential to develop into independent investigators and to aid in filling faculty gaps in areas of shortage in health profession institutions. Programs include the categorical CIA programs and the Pulmonary Faculty Development Award, in which new grants are no longer awarded.

Cooperative Clinical Research (R10): To support studies and evaluations of relevant clinical problems. These grants usually involve collaborative efforts among several institutions and principal investigators and are conducted under a formal protocol.

Minority Biomedical Support, MBS (S06): To strengthen the biomedical research and research training capability of minority institutions and to assist in increasing the involvement of minority faculty and students in biomedical research.

Scientific Evaluation: To support a Program Project Review Committee (P09), an initial Scientific Review Group (R09), or a training committee (T09) responsible for the assessment of scientific and technical merit of grant applications.

Conference Grants (R13): To support national and international scientific meetings, conferences, or workshops at which research is discussed.

Research Demonstration and Education Projects (R18): To provide support designed to develop, test, and evaluate health-related activities and to foster the application of existing knowledge to the control of heart, lung, and blood diseases.

Professional Continuing Education (Development) Training (T15): To assist professional schools and other public and nonprofit institutions to establish, expand, or improve programs of continuing professional education and especially programs of extensive continuation, extension, or refresher education dealing with new scientific developments.

Training Grants

Individual National Research Service Awards (NRSA)

Postdoctoral Individual NRSA (F32): To provide postdoctoral research fellowship training to individuals to broaden their scientific background and extend their potential for research in specific health-related areas.

NRSA for Senior Fellows (F33): To provide experienced scientists with an opportunity to make major changes in the direction of their research careers; to broaden their scientific background; to acquire new research capabilities; to enlarge their command of an allied research field; or to take time from regular professional responsibilities for the purpose of broadening research capabilities.

Minority Access to Research Careers (MARC) Faculty Fellowships (F34): To provide fellowships to faculty members from minority institutions to enable them to obtain advanced training in specific health and health-related areas.

Institutional National Research Service Awards (NRSA)

Institutional NRSA (T32): To enable institutions to make awards to individuals selected by them for predoctoral and postdoctoral research training in specific health-related areas.

Short-Term Research Training (T35): To provide individuals with research training during off-quarters or summer periods to encourage research careers or to encourage research in areas of national need. This program includes the Short-Term Minority Summer Hypertension Program and the Health Professional Student Research Training Program.

Index of Terms

BHAT	Beta-Blocker Heart Attack Trial	MBS	Minority Biomedical Support
CAPS	Cardiac Arrhythmia Pilot Study	MILIS	Multicenter Investigation of Limitation of Infarct Size
CASS	Coronary Artery Surgery Study	MRFIT	Multiple Risk Factor Intervention Trial
CHD	Coronary Heart Disease	NCHS	National Center for Health Statistics
CIA	Clinical Investigator Award	NHLBI	National Heart, Lung, and Blood Institute (formerly NHI and NHLI)
COPD	Chronic Obstructive Pulmonary Disease	NIH	National Institutes of Health
CPPT	Coronary Primary Prevention Trial	NRSA	National Research Service Award
CVD	Cardiovascular Diseases	OD	Office of the Director
DOPM	Direct Operations and Program Management	PAA	Pulmonary Academic Award
DPET	Diagnosis of Pulmonary Embolism	PCA	Preventive Cardiology Award
DRG	Division of Research Grants	PFDA	Pulmonary Faculty Development Award
FE	Federal Building	PHS	Public Health Service
FTE	Full-Time Equivalent	RCA	Research Career Award
FTTP	Full-Time Training Position	RCDA	Research Career Development Award
FY	Fiscal Year	R & D	Research and Development
HDFP	Hypertension Detection and Follow-Up Program	RFA	Request for Application
HEW	Department of Health, Education, and Welfare	RFP	Request for Proposal
HHS	Department of Health and Human Services (formerly HEW)	SBIR	Small Business Innovation Research
HSA	Health Services Administration	SCOR	Specialized Center of Research
IATC	Interagency Technical Committee	SERCA	Special Emphasis Research Career Award
IPPB	Intermittent Positive Pressure Breathing	TIMI	Thrombosis in Myocardial Infarction
LRC	Lipid Research Clinics	TMAA	Transfusion Medicine Academic Award
MARC	Minority Access to Research Careers	WW	Westwood Building

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