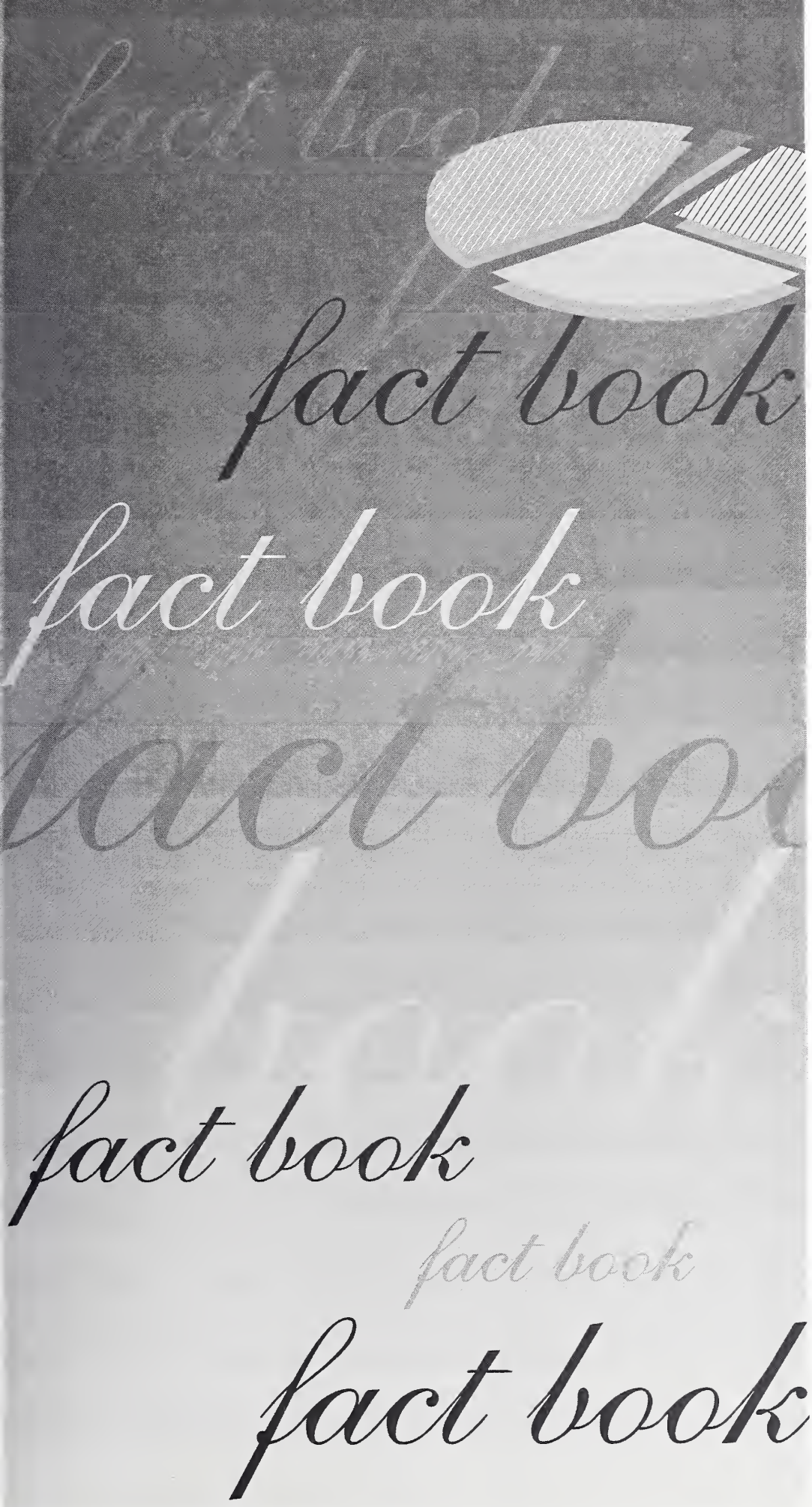
FACT BOOK

FISCAL YEAR

1996

NATIONAL INSTITUTES OF HEALTH
NATIONAL HEART, LUNG, AND BLOOD INSTITUTE



FACT BOOK
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FEBRUARY 1997

FOR ADMINISTRATIVE USE

NATIONAL INSTITUTES

OF HEALTH

National Heart, Lung,

and Blood Institute

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1. Directory of Personnel*

Office of the Director	Bldg.	Room	Phone	MSC†,‡
Director, **Claude Lenfant, M.D.**	31	5A52	496-5166	2486
Deputy Director, **Peter L. Frommer, M.D.**	31	5A49	496-1078	2490
Assistant to the Director, **Sheila Pohl**	31	5A52	496-6471	2486
Special Assistant to the Director (NHLBI AIDS Coordinator), **Elaine Sloand, M.D.**	31	4A11	496-3245	2490
Associate Director for Administrative Management, **Sheila Merritt**	31	5A48	496-2411	2490
Associate Director for Scientific Program Operation, **Carl A. Roth, Ph.D., LL.M.**	31	5A03	496-6331	2482
Associate Director for Prevention, Education, and Control, **Gregory J. Morosco, Ph.D., M.P.H.**	31	4A03	496-5437	2480
Associate Director for International Programs, **Ruth J. Hegyeli, M.D.**	31	4A07	496-5375	2490
Office of Special Concerns Director, **Mishyelle I. Croom**	31	4A28	496-1763	2490
Office of Administrative Management				
Director/Executive Officer, **Sheila Merritt**	31	5A48	496-2411	2490
Technology Development Coordinator, **Harold Safferstein, Ph.D.**	31	1B30	402-5579	2490
Management Policy and Administrative Services Branch				
Chief, **LaVerne Stringfield**	31	5A33	496-5931	2490
Freedom of Information Coordinator, **Suzanne Anthony**	31	5A10	496-9737	2490
Privacy Act Coordinator, **Suzanne Anthony**	31	5A10	496-9737	2490
Financial Management Branch				
Chief, **James R. Wehling**	31	5A48	496-4653	2490
Personnel Management Branch				
Chief, **Barry Rubinstein**	31	5A28	496-6477	2484
National Center on Sleep Disorders Research				
Director, **James P. Kiley, Ph.D.**	RKL2§	7124	435-0199	7920
Office of Prevention, Education, and Control				
Director, **Gregory J. Morosco, Ph.D., M.P.H.**	31	4A03	496-5437	2480
Health Communications and Information Science				
Senior Manager, **Terry C. Long**	31	4A03	496-0554	2480
Public Health Program Development				
Senior Manager, **Robinson Fulwood, M.S.P.H.**	31	4A03	496-0554	2480
National High Blood Pressure Education Program				
Coordinator, **Edward J. Roccella, Ph.D., M.P.H.**	31	4A16	496-1051	2480
National Cholesterol Education Program				
Coordinator, **James I. Cleeman, M.D.**	31	4A16	496-1051	2480

* Current as of October 15, 1996. For locating personnel not listed, the general information number is 301-496-4000. The Personnel Directory, which is periodically updated throughout the year, is located on the NHLBI Gopher Server under NHLBI Organization and Staff.

† MSC—Mail Stop Code.

‡ Full mailing address formats are located at the end of this chapter.

§ RKL2—Rockledge II Building.

Office of the Director (cont'd.)	Bldg.	Room	Phone	MSC
National Asthma Education and Prevention Program Coordinator, **Robinson Fulwood, M.S.P.H.**	31	4A03	496-0554	2480
National Heart Attack Alert Program Coordinator, **Mary McDonald Hand, R.N., M.S.**	31	4A16	496-1051	2480
National Obesity Education Initiative Coordinator, **Karen Donato, M.S., R.D.**	31	4A16	496-1051	2480
Office of Science and Technology				
Director, **Carl A. Roth, Ph.D., LL.M.**	31	5A03	496-6331	2482
Deputy Director, **Barbara Liu, S.M.**	31	5A06	496-9899	2482
Office of International Programs Director, **Ruth J. Hegyeli, M.D.**	31	4A07	496-5375	2490
Program Studies and Reports Program Director, **Carl A. Roth, Ph.D., LL.M.**	31	5A03	496-6331	2482
Science and Legislation Program Director, **Barbara Liu, S.M.**	31	5A06	496-9899	2482
Information Resources and Technology Program Director, **John J. Filigenzi**	RKL2	8093	435-0119	7932
Division of Heart and Vascular Diseases				
Director, **Michael J. Horan, M.D., Sc.M.**	RKL2	9160	435-0466	7940
Deputy Director, **Stephen C. Mockrin, Ph.D.**	RKL2	9170	435-0477	7940
Administrative Officer, **Leslie F. Herbert**	RKL2	9152	435-0484	7940
Heart Research Program				
Director, **Patrice Desvigne-Nickens, M.D.**	RKL2	9158	435-0494	7940
Senior Scientific Advisor, **Frank D. Altieri, Ph.D.**	RKL2	9166	435-0494	7940
Arrhythmias Scientific Research Group Leader, **Peter M. Spooner, Ph.D.**	RKL2	9192	435-0504	7940
Bioengineering Scientific Research Group Leader, **John T. Watson, Ph.D.**	RKL2	9178	435-0513	7940
Ischemic Heart Disease Scientific Research Group Leader, **John L. Fakunding, Ph.D.**	RKL2	9200	435-0505	7940
Congenital and Infectious Diseases Scientific Research Group Leader, **Constance E. Weinstein, Ph.D.**	RKL2	9144	435-0510	7940
Heart Failure Scientific Research Group Leader, **Judith Massicot-Fisher, Ph.D.**	RKL2	9146	435-0520	7940
Interventional Cardiology Scientific Research Group Leader, **George Sopko, M.D.**	RKL2	9176	435-0515	7940
Training and Special Programs Scientific Research Group Leader, **Michael A. Commarato, Ph.D.**	RKL2	9204	435-0535	7940
Vascular Research Program				
Director, **David M. Robinson, Ph.D.**	RKL2	10196	435-0545	7956
Senior Scientific Advisor, **Basil M. Rifkind, M.D.**	RKL2	10190	435-0545	7956
Atherosclerosis Scientific Research Group Leader, **Momtaz Wassef, Ph.D.**	RKL2	10188	435-0550	7956
Cardiovascular Homeostasis and Bionutrition Scientific Research Group Leader, **Abby G. Ershow, Sc.D.**	RKL2	9186	435-0540	7940
Hypertension Scientific Research Group Leader, **Paul A. Velletri, Ph.D.**	RKL2	10202	435-0560	7956

Division of Heart and Vascular Diseases (cont'd.)	Bldg.	Room	Phone	MSC
Molecular Genetics and Medicine Scientific Research Group				
Leader, **Sonia Skarlatos, Ph.D.**	RKL2	10186	435-1802	7956
Vascular Biology Scientific Research Group				
Leader, **Alfred Small, Ph.D.**	RKL2	10194	435-0565	7956
Vascular Medicine Scientific Research Group				
Leader, **David J. Gordon, M.D., Ph.D.**	RKL2	10184	435-0555	7956
Training and Special Programs Scientific Research Group				
Leader, **Beth Schucker, M.A.**	RKL2	9206	435-0535	7940
Division of Lung Diseases				
Director, **Suzanne S. Hurd, Ph.D.**	RKL2	10122	435-0233	7952
Deputy Director, **Carol E. Vreim, Ph.D.**	RKL2	10120	435-0233	7952
Administrative Officer, **Loretta L. Barnes**	RKL2	10116	435-0244	7952
Airway Biology and Disease Program				
Director, **James P. Kiley, Ph.D.**	RKL2	10210	435-0202	7952
Senior Scientific Advisor,				
Susan P. Banks-Schlegel, Ph.D.	RKL2	10220	435-0202	7952
Asthma Scientific Research Group				
Leader, **Virginia S. Taggart, M.P.H.**	RKL2	10214	435-0202	7952
Chronic Obstructive Pulmonary Disease/Environment Scientific Research Group				
Leader, **Gail G. Weinmann, M.D.**	RKL2	10208	435-0202	7952
Cystic Fibrosis Scientific Research Group				
Leader, **Susan P. Banks-Schlegel, Ph.D.**	RKL2	10220	435-0202	7952
Neurobiology and Sleep Scientific Research Group				
Leader, **James P. Kiley, Ph.D.**	RKL2	10210	435-0202	7952
Training and Special Programs Scientific Research Group				
Leader, **J. Sri Ram, Ph.D.**	RKL2	10206	435-0202	7952
Lung Biology and Disease Program				
Director, **Dorothy B. Gail, Ph.D.**	RKL2	10100	435-0222	7952
Senior Scientific Advisor, **Robert A. Musson, Ph.D.**	RKL2	10108	435-0222	7952
Acquired Immunodeficiency Syndrome/Tuberculosis Scientific Research Group				
Leader, **Hannah H. Peavy, M.D.**	RKL2	10110	435-0222	7952
Critical Care/Acute Lung Injury Scientific Research Group				
Acting Leader, **Dorothy B. Gail, Ph.D.**	RKL2	10100	435-0222	7952
Developmental Biology and Pediatrics Scientific Research Group				
Leader, **Mary Anne Berberich, Ph.D.**	RKL2	10102	435-0222	7952
Immunology/Fibrosis Scientific Research Group				
Leader, **Robert A. Musson, Ph.D.**	RKL2	10108	435-0222	7952
Lung Cell and Vascular Biology Scientific Research Group				
Leader, **Dorothy B. Gail, Ph.D.**	RKL2	10100	435-0222	7952
Training and Special Programs Scientific Research Group				
Leader, **Mary S. Reilly, M.S.**	RKL2	10112	435-0222	7952

Division of Blood Diseases and Resources	Bldg.	Room	Phone	MSC
Director, **Clarice D. Reid, M.D.**	RKL2	10160	435-0080	7950
Deputy Director, **Carol H. Letendre, Ph.D.**	RKL2	10162	435-0080	7950
Administrative Officer, **Judith Ireland**	RKL2	10168	435-0085	7950
Program Analysis Officer, **Susan Pucie**	RKL2	10166	435-0584	7950
Blood Resources Program				
Director, **Paul R. McCurdy, M.D.**	RKL2	10138	435-0065	7950
Transfusion Medicine Scientific Research Group				
Leader, **George J. Nemo, Ph.D.**	RKL2	10142	435-0075	7950
Bone Marrow Transplantation Scientific Research Group				
Leader, **Paul McCurdy, M.D.**	RKL2	10138	435-0065	7950
Thrombosis and Hemostasis Scientific Research Group				
Leader, **Pankaj Ganguly, Ph.D.**	RKL2	10176	435-0070	7950
Training and Special Programs				
Joyce I. Creamer, M.B.A.	RKL2	10170	435-0061	7950
Blood Diseases Program				
Director, **Alan S. Levine, Ph.D.**	RKL2	10158	435-0050	7950
Sickle Cell Disease Scientific Research Group				
Leader, **Duane Bonds, M.D.**	RKL2	10148	435-0055	7950
Cellular Hematology Scientific Research Group				
Leader, **Alan S. Levine, Ph.D.**	RKL2	10158	435-0050	7950
Training and Special Programs				
Bette A. Houston	RKL2	10159	435-0063	7950
Division of Epidemiology and Clinical Applications				
Director, **Lawrence M. Friedman, M.D.**	RKL2	8100	435-0422	7938
Deputy Director, **Peter Savage, M.D.**	RKL2	8104	435-0422	7938
Senior Advisor, **Gerald Payne, M.D.**	RKL2	8102	435-0433	7938
Nutrition Coordinator, **Nancy Ernst, M.S., R.D.**	RKL2	8112	435-0433	7938
Administrative Officer, **Patricia Robertson**	RKL2	8110	435-1285	7938
Office of Biostatistics Research				
Director, **Nancy L. Geller, Ph.D.**	RKL2	8210	435-0434	7938
Clinical Applications and Prevention Program				
Director, **Jeffrey Cutler, M.D.**	RKL2	8130	435-0414	7936
Prevention Scientific Research Group				
Leader, **Denise Simons-Morton, M.D., Ph.D.**	RKL2	8138	435-0377	7936
Clinical Trials Scientific Research Group				
Leader, **Michael Domanski, M.D.**	RKL2	8146	435-0399	7936
Behavioral Medicine Scientific Research Group				
Leader, **Peter G. Kaufmann, Ph.D.**	RKL2	8118	435-0404	7936
Epidemiology and Biometry Program				
Director, **Teri Manolio, M.D., M.H.S.**	RKL2	8160	435-0707	7934
Field Studies and Clinical Epidemiology Scientific Research Group				
Assistant Director, **Diane Bild, M.D.**	RKL2	8154	435-0701	7934
Framingham Epidemiology Research Unit				
Leader, **Daniel Levy, M.D.**	5 Thurber Street Framingham, MA 01701 (508) 935-3458			
Honolulu Epidemiology Research Unit				
Leader, **Dan Sharp, M.D., Ph.D.**	Kuakini Medical Center 347 North Kuakini Street Honolulu, HI 96817 (808) 536-7283			

Division of Epidemiology and Clinical Applications (cont'd.)	Bldg.	Room	Phone	MSC
Social and Environmental Epidemiology Scientific Research Group				
Leader, **A. Richey Sharrett, M.D., Dr.P.H.**	RKL2	8164	435-0444	7934
Analytical Resources Scientific Research Group				
Leader, **Paul D. Sorlie, Ph.D.**	RKL2	8176	435-0449	7934
Division of Extramural Affairs				
Director, **Ronald G. Geller, Ph.D.**	RKL2	7100	435-0260	7922
Deputy Director, **C. James Scheirer, Ph.D.**	RKL2	7220	435-0266	7924
Administrative Officer, **Christinia Roark**	RKL2	7110	435-0252	7922
Committee Management Specialist, **Kathryn M. Valeda**	RKL2	7108	435-0255	7922
Review Branch				
Chief, **C. James Scheirer, Ph.D.**	RKL2	7220	435-0266	7924
Senior Review Advisor, **Louis M. Ouellette, Ph.D.**	RKL2	7216	435-0310	7924
Special Assistant, **Louise P. Corman, Ph.D.**	RKL2	7180	435-0270	7924
Cardiology/Pulmonary Scientific Review Group				
Leader, **Deborah Beebe, Ph.D.**	RKL2	7178	435-0270	7924
Blood/Vascular Scientific Review Group				
Leader, **Jeffrey H. Hurst, Ph.D.**	RKL2	7208	435-0303	7924
Clinical Studies and Training Scientific Review Group				
Leader, **Anthony M. Coelho, Jr., Ph.D.**	RKL2	7194	435-0288	7924
Contracts Operations Branch				
Chief, **Robert R. Carlsen**	RKL2	6100	435-0330	7902
Heart, Lung, and Vascular Diseases Section				
Chief, **Douglas W. Frye**	RKL2	6106	435-0340	7902
Blood Diseases and Resources Section				
Chief, **Patricia E. Davis**	RKL2	6136	435-0357	7902
Epidemiology and Clinical Applications Section				
Chief, (Vacant)	RKL2	6126	435-0345	7902
Procurement Section				
Chief, **Debra C. Hawkins**	RKL2	6150	435-0366	7902
Grants Operations Branch				
Chief, **Thomas G. Turley**	RKL2	7160	435-0144	7926
Heart and Vascular Diseases Section				
Chief, **William W. Darby**	RKL2	7128	435-0177	7926
Lung Diseases Section				
Chief, **Raymond L. Zimmerman**	RKL2	7154	435-0171	7926
Blood Diseases and Resources Section				
Chief, **Jane R. Davis**	RKL2	7174	435-0166	7926
Division of Intramural Research				
Director, **Edward D. Korn, Ph.D.**	10	7N214	496-2116	1668
Clinical Director, **Harry R. Keiser, M.D.**	10	8C103	496-1518	1754
Pathology Section				
Chief, **Victor J. Ferrans, M.D., Ph.D.**	10	2N240	402-0908	1518
Administrative Officer, **Hillel Soclof**	10	7N220	496-2157	1670
Deputy Administrative Officer, **Carroll Hanson**	10	7N220	402-1985	1670
Cardiology Branch				
Chief, **Stephen E. Epstein, M.D.**	10	7B15	496-5817	1650
Clinical Physiology and Molecular and Cellular Biology Section				
Chief, **Stephen E. Epstein, M.D.**	10	7B15	496-5817	1650

Division of Intramural Research (cont'd.)	Bldg.	Room	Phone	MSC
Cardiac Catheterization Section				
Chief, **Richard O. Cannon, M.D.**	10	7B15	496-9985	1650
Cardiac Consultation Section				
Chief, **Eben E. Tucker, M.D.**	10	7B15	496-2742	1650
Experimental Physiology and Pharmacology Section				
Chief, (Vacant)	10	7B15	496-5817	1650
Inherited Cardiovascular Disease Section				
Chief, **Neal D. Epstein, M.D.**	10	8N112	496-2102	1650
Nuclear Cardiology Section				
Chief, (Vacant)	10	7B15	496-5817	1650
Hematology Branch				
Chief, **Neal S. Young, M.D.**	10	7C103	496-5093	1652
Hypertension-Endocrine Branch				
Chief, **Harry R. Keiser, M.D.**	10	8C103	496-1518	1754
Molecular Disease Branch				
Chief, **H. Bryan Brewer, M.D.**	10	7N117	496-5095	1666
Cell Biology Section				
Chief, **Jeffrey M. Hoeg, M.D.**	10	7N114	496-3195	1666
Experimental Atherosclerosis Section				
Chief, **Howard S. Kruth, M.D.**	10	5N113	496-4826	1422
Molecular Biology Section				
Chief, **Silvia M. Santamarina-Fojo, M.D., Ph.D.**	10	7N108	496-6050	1666
Peptide Chemistry Section				
Chief, **H. Bryan Brewer, M.D.**	10	7N117	496-5095	1666
Molecular Hematology Branch				
Acting Chief, **Brian Safer, M.D., Ph.D.**	10	7D18	496-1284	1654
Protein Biosynthesis Section				
Chief, **Brian Safer, M.D., Ph.D.**	10	7D18	496-1284	1654
Pulmonary/Critical Care Medicine Branch				
Chief, **Joel Moss, M.D., Ph.D.**	10	6D03	496-1597	1590
Biochemical Physiology Section				
Chief, **Vincent Manganiello, M.D., Ph.D.**	10	5N323	496-1594	1434
Clinical Studies Section				
Chief, **Joel Moss, M.D., Ph.D.**	10	6D03	496-1597	1590
Metabolic Regulation Section				
Chief, **Martha Vaughan, M.D.**	10	5N307	496-4554	1434
Molecular Mechanisms Section				
Chief, **Joel Moss, M.D., Ph.D.**	10	6D03	496-1597	1590
Pulmonary and Cardiac Assist Devices Section				
Chief, **Theodor Kolobow, M.D.**	10	5D17	496-2057	1590
Laboratory of Animal Medicine and Surgery				
Chief, **Robert F. Hoyt, Jr., D.V.M., M.S.**	14E	106B	496-9673	5570
Laboratory of Biochemical Genetics				
Chief, **Marshall W. Nirenberg, Ph.D.**	36	1C06	496-5208	4036
Macromolecules Section				
Chief, **Alan Peterkofsky, Ph.D.**	36	4C09	496-2408	4036
Molecular Biology Section				
Chief, **Marshall W. Nirenberg, Ph.D.**	36	1C06	496-5208	4036
Laboratory of Biochemistry				
Chief, **P. Boon Chock, Ph.D.**	3	222	496-4096	0340
Enzymes Section				
Chief, **Earl R. Stadtman, Ph.D.**	3	222	496-4096	0342
Intermediary Metabolism and Bioenergetics Section				
Chief, **Thressa C. Stadtman, Ph.D.**	3	108	496-3002	0320

Division of Intramural Research (cont'd.)	Bldg.	Room	Phone	MSC
Protein Chemistry Section				
Chief, **R. Ann Ginsburg, Ph.D.**	3	208	496-1278	0340
Metabolic Regulation Section				
Chief, **P. Boon Chock, Ph.D.**	3	222	496-4096	0340
Protein Function in Disease Section				
Chief, **Rodney L. Levine, M.D., Ph.D.**	3	106	496-2310	0320
Laboratory of Biophysical Chemistry				
Chief, **Henry M. Fales, Ph.D.**	10	7N318	496-2135	1676
Chemical Structure Section				
Chief, **Henry M. Fales, Ph.D.**	10	7N318	496-2135	1676
Structural Biophysics Section				
Chief, **James A. Ferretti, Ph.D.**	3	418	496-3341	0380
Laboratory of Cardiac Energetics				
Chief, **Robert S. Balaban, Ph.D.**	10	B1D161	496-3658	1061
Laboratory of Cell Biology				
Chief, **Edward D. Korn, Ph.D.**	3	B1-22	496-1616	0301
Cellular Physiology Section				
Chief, **Evan Eisenberg, M.D., Ph.D.**	3	B1-23	496-2846	0301
Cellular Biochemistry and Ultrastructure Section				
Chief, **Edward D. Korn, Ph.D.**	3	B1-22	496-1616	0301
Membrane Enzymology Section				
Chief, **Richard W. Hendler, Ph.D.**	3	B1-06	496-2610	0301
Molecular Cell Biology Section				
Chief, **John A. Hammer, III, Ph.D.**	3	B1-18	496-8960	0301
Laboratory of Cell Signaling				
Chief, **Sue Goo Rhee, Ph.D.**	3	122	496-9646	0320
Laboratory of Kidney and Electrolyte Metabolism				
Chief, **Maurice B. Burg, M.D.**	9	1N105	496-3187	1598
Renal Cellular and Molecular Biology Section				
Chief, **Maurice B. Burg, M.D.**	9	1N105	496-3187	1598
Renal Mechanisms Section				
Chief, **Mark A. Knepper, M.D., Ph.D.**	9	1E122	496-3064	1598
Transport Physiology Section				
Chief, **Kenneth R. Spring, Ph.D.**	9	1N103	496-3236	1598
Laboratory of Molecular Cardiology				
Chief, **Robert S. Adelstein, M.D.**	10	8N202	496-1865	1762
Cellular and Molecular Motility Section				
Chief, **James R. Sellers, Ph.D.**	10	8N117	496-6887	1760
Muscle Molecular Biology Section				
Chief, **Robert S. Adelstein, M.D.**	10	8N202	496-1865	1762
Laboratory of Molecular Immunology				
Chief, **Warren J. Leonard, M.D.**	10	7N244	496-0098	1674
Chemical Pharmacology Section				
Chief, **Gopal A. Krishna, Ph.D.**	10	8N107	496-2098	1760
Intracellular Signaling Section				
Chief, **Michael A. Beaven, Ph.D.**	10	8N114	496-6188	1760
Lymphocyte Activation Section				
Chief, **Warren J. Leonard, M.D.**	10	7N244	496-0098	1674
Molecular and Cellular Toxicology Section				
Chief, **Lance R. Pohl, Ph.D.**	10	8N115	496-4841	1760

NIH Mailing Address Formats

NHLBI staff E-Mail addresses can be found by using the NIH Directory Service. The Directory Service is located on the NIH Gopher Server under E-Mail and Directory Services.

Please use the following formats for NIH mailing addresses:

Building 3
Full Name
NHLBI, NIH
Building 3, Room ____
3 Center Drive, MSC* ____
Bethesda, MD 20892-MSC†

Building 10
Full Name
NHLBI, NIH
Building 10, Room ____
10 Center Drive, MSC* ____
Bethesda, MD 20892-MSC†

Building 14E
Full Name
NHLBI, NIH
Building 14E, Room ____
14 Service Road South, MSC* ____
Bethesda, MD 20892-MSC†

Building 31
Full Name
NHLBI, NIH
Building 31, Room ____
31 Center Drive, MSC* ____
Bethesda, MD 20892-MSC†

Building 36
Full Name
NHLBI, NIH
Building 36, Room ____
36 Convent Drive, MSC* ____
Bethesda, MD 20892-MSC†

Rockledge II Building
Full Name
NHLBI, NIH
Two Rockledge Center, Room ____
6701 Rockledge Drive, MSC* ____
Bethesda, MD 20892-MSC†

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* Retain the letters MSC before adding the mail stop code number.

† Replace the letters MSC with the mail stop code number.

2. Program Overview

In 1948, the National Heart Institute was established through the National Heart Act with a mission to support research and training in the prevention, diagnosis, and treatment of cardiovascular diseases (CVD). Twenty-four years later, through section 413 of the National Heart, Blood Vessel, Lung, and Blood Act (P.L. 92-423), Congress mandated the Institute to expand and coordinate its activities in an accelerated attack against heart, blood vessel, lung, and blood diseases. The renamed National Heart, Lung, and Blood Institute (NHLBI) expanded its scientific areas of interest and intensified its efforts related to research on diseases within its purview. Over the years, these areas have grown to encompass genetic research and sleep disorders.

The mission of the NHLBI is to provide leadership for a national program in diseases of the heart, blood vessels, lung, and blood; sleep disorders; and blood resources. The Institute plans, conducts, fosters, and supports an integrated and coordinated program of basic research, clinical investigations and trials, observational studies, demonstration and education projects related to the causes, prevention, diagnosis, and treatment of heart, blood vessel, lung, blood diseases, and sleep disorders conducted in its own laboratories and by scientific institutions and individuals supported by research grants and contracts. It plans and directs research in the development, trial, and evaluation of interventions and devices related to the prevention, treatment, and rehabilitation of patients suffering from such diseases and disorders. The Institute conducts research on clinical use of blood and all aspects of the management of blood resources. It supports research training and career development of new and established researchers in fundamental sciences and clinical disciplines to enable them to conduct basic and clinical research related to heart, blood vessel, lung, and blood diseases; sleep disorders; and blood resources through individual and institutional research training awards and career development awards. It coordinates with other research institutes and all Federal health programs with relevant activities in the above areas, including the related causes of stroke. It conducts educational activities, including development and dissemination of materials for health professionals and the public in the above areas, with emphasis on prevention. In addition, it maintains continuing relationships with institutions and professional associations and with international, national, state, and local officials as well as voluntary agencies and organizations working in the above areas.

Each year, the NHLBI assesses progress in the scientific areas for which it is responsible and updates its goals and objectives. As new opportunities are identified, the Institute expands and revises its areas of interest. Throughout the process, the approach used by the Institute is an orderly sequence of research activities that includes:

- Acquisition of knowledge
- Evaluation of knowledge
- Application of knowledge
- Dissemination of knowledge.

The NHLBI, in response to a need to streamline its operations, reorganized its program in the manner shown on page 10. This program is implemented through five extramural units: the Division of Heart and Vascular Diseases (DHVD), the Division of Lung Diseases (DLD), the Division of Blood Diseases and Resources (DBDR), the Division of Epidemiology and Clinical Applications (DECA), and the National Center on Sleep Disorders Research (NCSDR), and one intramural unit, the Division of Intramural Research (DIR). The Divisions and the Center pursue their own scientific mission but cooperate in areas of shared interest such as prevention, education, and control. The extramural Divisions and the Center use a variety of funding mechanisms, including research grants, program project grants, contracts, centers, and research training programs. Descriptions of the Division and Center programs follow.

Division of Heart and Vascular Diseases

An estimated 57 million Americans have CVD, 34 million of whom are under 65 years of age. Hypertension affects 50 million of the U.S.

National Heart, Blood Vessel, Lung, and Blood Diseases and Blood Resources Program

Heart and Vascular Diseases	Lung Diseases	Blood Diseases and Resources
Heart Research	*Airway Biology and Disease*	*Blood Diseases*
Arrhythmias	Asthma	Sickle Cell Disease
Bioengineering	Chronic Obstructive Pulmonary Disease and Environment	Cellular Hematology
Ischemic Heart Disease	Cystic Fibrosis	
Congenital and Infectious Diseases	Neurobiology and Sleep	
Heart Failure		
Interventional Cardiology		
Vascular Research	*Lung Biology and Disease*	*Blood Resources*
Molecular Genetics and Medicine	Acquired Immunodeficiency Syndrome and Tuberculosis	Transfusion Medicine
Atherosclerosis	Critical Care and Acute Lung Injury	Bone Marrow Transplantation
Hypertension	Developmental Biology and Pediatrics	Thrombosis and Hemostasis
Vascular Biology	Immunology and Fibrosis	
Vascular Medicine	Lung Cell and Vascular Biology	
Cardiovascular Homeostasis and Bionutrition		

Epidemiology and Clinical Applications	National Center on Sleep Disorders Research	Intramural Research
Clinical Applications and Prevention	Sleep	Cardiology
Prevention	Sleep Disorders and Related Conditions	Hematology
Clinical Trials		Hypertension-Endocrine
Behavioral Medicine		Molecular Disease
Epidemiology and Biometry		Molecular Hematology
Field Studies and Clinical Epidemiology		Pulmonary-Critical Care Medicine
Social and Environmental Epidemiology		Animal Medicine and Surgery
Analytical Resources		Biochemical Genetics
		Biochemistry
		Biophysical Chemistry
		Cardiac Energetics
		Cell Biology
		Cell Signaling
		Kidney and Electrolyte Metabolism
		Molecular Cardiology
		Molecular Immunology

population. Approximately 13.7 million Americans have coronary heart disease (CHD), almost 4 million have cerebrovascular disease, and 2 million have peripheral vascular diseases. Of all people with these diseases, about 8 million are limited in activity. In 1995, about 42 percent of all deaths (962,000) were attributed to CVD, and 52 percent of them occurred in women. The economic cost to the Nation in 1997 is projected to be an estimated $259 billion, of which $158 billion will be for health expenditures and $101 billion will be for lost productivity.

The DHVD plans and directs an integrated and coordinated research program, with an emphasis on advancing knowledge of the causes of heart and vascular diseases and on their prevention, diagnosis, and treatment. The strategy for implementation of its goals provides a balance

of activities across the continuum of biomedical research, with an emphasis 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 promising preventive or therapeutic measures.

Arteriosclerosis, CHD, and hypertension were areas of major emphasis within the Division's research program in fiscal year (FY) 1996. Examples of newly supported programs include those that focus on research in gene-nutrient interactions in the pathogenesis of congenital heart defects, etiology of excess CVD in diabetes mellitus, angiogenesis and vascular remodeling in the microvasculature, and innovative ventricular assist systems. Additional examples are Specialized Centers of Research (SCORs) that examine genetic determinants of high blood pressure; ischemic heart disease, sudden cardiac death, and heart failure; and ischemic heart disease in blacks. Solicitations of applications were issued for research on the elucidation of mechanisms responsible for myocardial dysfunction, specifically those involved in the transition from cardiac hypertrophy to overt heart failure; and for research on atherosclerotic lesions using human tissues. The Division provides significant support to minority institutions through such research career and training programs as the Minority National Research Service Award, Minority School Faculty Development Award, Research Development Award for Minority Faculty, and Short-Term Research Training for Minority Students Award.

Division of Lung Diseases

Lung diseases are among the leading causes of death and disability in the United States. More than 25 million persons have chronic bronchitis, emphysema, asthma, or other obstructive or interstitial lung diseases. Pulmonary diseases accounted for 26 percent of all hospitalizations of children under 15 years of age in the United States in 1994.

As an underlying cause, lung diseases, excluding cancer, account for 228,000 deaths annually, and lung diseases are a contributing cause to perhaps an equal number of additional deaths. The lung disease problems addressed by the Institute will cost the Nation about $115 billion in 1997, of which $78 billion will be for health expenditures and $37 billion will be for lost productivity.

The DLD plans and directs a coordinated research program on the causes of lung diseases and on their prevention, diagnosis, and treatment. Its activities focus on understanding the structure and function of the respiratory system, increasing fundamental knowledge of mechanisms associated with specific pulmonary disorders, and applying new findings to evolving treatment strategies for patients.

The NHLBI established six centers for gene therapy in FY 1993. Presently, the centers are focusing mainly on cystic fibrosis (CF) research but include other areas associated with gene therapy for heart, lung, and blood diseases. Basic, preclinical, and clinical studies are directed toward developing safe, efficient, and efficacious vehicles for delivering genes to appropriate target cells. Basic science and clinical findings are identifying new directions needed to generate improved gene transfer vectors, to manage the inflammatory and immune consequences of vector transfer, and to develop alternative vector systems. A grant program was initiated to stimulate research on the molecular pathogenesis and pathophysiology of CF and to develop new approaches to therapy. Several grants were cofunded with the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK).

Asthma research is an area of high priority for the Division. The DLD supports a collaborative multicenter study in human pedigrees from various racial/ethnic groups to identify the major genes responsible for asthma. With recruitment near completion, gene mapping studies have been initiated. Identification of the genes important to asthma will facilitate development of new modes of treatment and will lead to an understanding of causal interactions between genes and environmental factors that are relevant in asthma. In 1996, the Division sponsored two workshops on asthma prevention to stimulate research in this critical area. It supports several research programs designed to develop and evaluate effective strategies for improving asthma care among Latino and black children, who

appear to suffer disproportionately from the disease. Some of the findings from this research were recently published in the document *Asthma Management in Minority Children: Practical Insights for Clinicians, Researchers, and Public Health Planners.*

Additional asthma research projects involving children include a 5-year, multicenter clinical trial to examine the long-term effects of three different asthma medications on 1,000 children and a study to develop and evaluate innovative approaches to ensure optimal disease management and prevention in the elementary school setting. The DLD is also participating in a collaborative study with the National Institute of Child Health and Human Development (NICHD) to determine the effects of asthma and its treatment on pregnancy and the effects of pregnancy on asthma.

The Division supports an asthma clinical research network of interactive asthma clinical research groups to rapidly assess novel treatment methods and to ensure that these findings on optimal management of asthmatic patients are rapidly disseminated to practitioners and health care professionals. One trial is investigating the long-term effects of two short-acting beta-agonist treatment regimens and another is studying the use of colchicine in moderate asthma. Additional clinical trials are examining the effectiveness and side effects of a long-acting beta-agonist and corticosteroids.

To promote the application of scientific findings in the clinical setting, the Division prepared a report on the diagnosis and management of asthma in the elderly. Currently, it is preparing an update of the *National Asthma Education and Prevention Program's Expert Panel Report on Asthma Management.* A report entitled *Global Strategy for Asthma Management and Prevention* was published in FY 1995 as part of a collaboration between the NHLBI and the World Health Organization (WHO); a followup series of practical guides was published in FY 1996. With its international partners, the DLD is participating in the organization of "Global Initiative for Asthma," a program to increase awareness of asthma and its public health consequences, promote the study of the association between asthma and the environment, and reduce asthma morbidity and mortality throughout the world.

Smoking-related diseases are a major cause of mortality and morbidity in the United States. Division-supported research in this area includes a randomized trial on the effect of inhaled corticosteroids on the natural history of lung function in continuing smokers.

Acquired immunodeficiency syndrome (AIDS) and tuberculosis (TB) research are also important areas of investigation for the Division. Specific programs include a clinical study of cardiopulmonary complications of HIV infection in infants and children and several programs to address the pathobiology of *pneumocystis carinii*, the basic cell biology of pulmonary manifestations of AIDS, the development of lung-specific drug delivery systems for enhanced TB treatment, and behavioral interventions for control of TB. A new program started in FY 1996 will support research on cellular and molecular events involved in the regulation of HIV activation in the lung. Microbial and other cofactors, cytokines, and chemokines that allow HIV to remain quiescent in lung cells and those that stimulate viral replication are being investigated.

Several newly initiated programs include a prospective randomized clinical trial to assess innovative treatment methods in patients at risk for developing adult respiratory distress syndrome; an epidemiological study to investigate causes and environmental and genetic risk factors for sarcoidosis; a study of causes of noninfectious pneumonia, an often fatal complication of bone marrow transplantation; and a multi-institutional collaboration to create a molecular profile of bronchopulmonary dysplasia that will provide insight into the condition and offer directions for developing new reagents for clinical interventions.

The Division supports several other activities. Examples include research training and career development programs to provide postdoctoral opportunities to beginning investigators, prevention programs to extend important services to communities, and demonstration and education activities to transfer basic research and clinical findings to health care professionals and patients.

Support for all the activities of the Division constitute not less than 15 percent of the funds allocated to the NHLBI, as required by legislation.

Division of Blood Diseases and Resources

Blood diseases, including both acute and chronic disorders, resulted in 268,000 deaths in 1995; 259,000 of them were due to thrombotic disorders and 9,000 were due to diseases of the red blood cells and bleeding disorders. In 1997, thrombotic disorders and other blood diseases will cost an estimated $74 billion, of which $45 billion will be for health expenditures and $29 billion for lost productivity. Blood resources include nearly two dozen products derived from more than 14 million units of whole blood collected from almost 9 million American donors that are subsequently transfused annually to patients. In 1992, an estimated 23 million units of blood products were transfused to 5 million patients. Adverse effects following blood transfusion include development of hepatitis C—the risk being about 1:103,000 per unit of blood or blood product transfused. The risk of being infected with HIV is estimated to be 1:493,000 per unit. Universal screening of donor blood for antibodies to human immunodeficiency virus (HIV) began in 1985, and universal screening for antibodies to hepatitis C virus began in 1990. The screening tests, which have been improved over the years, have greatly reduced the risk of infection to transfusion recipients.

The DBDR develops, administers, and coordinates programs that will reduce morbidity and mortality caused by blood diseases and lead to their primary prevention. These programs include hemophilia, Cooley's anemia, sickle cell disease, and disorders of hemostasis and thrombosis. The Division also has a major responsibility to ensure the adequacy and safety of the Nation's blood supply. A full range of activities, including studies of transmission of disease through transfusion, development of methods to inactivate viruses in donated blood, improvement of blood donor screening procedures, research to reduce human error in transfusion medicine, and studies of emerging diseases that may be transmitted by blood transfusion, are used to achieve this goal.

Finding an effective therapy for sickle cell disease remains a high priority. Despite progress in the area of treatment for the disease, no universally effective therapeutic agent exists. The drug hydroxyurea, although promising, may have long-term side effects, and its safety and efficacy in children are unknown. Following the announcement of an RFA in 1996, eight highly meritorious applications were awarded in areas such as computer-generated antisickling compounds, removal of pathological iron from sickle red blood cells, methods for gene transfer, and transgenic models of sickle cell disease.

Dissemination of research findings to the medical community through workshops, conferences, and consensus development conferences is an important function of the Division. Topics covered include plasma transfusion, platelet transfusion therapy, diagnosis of deep-vein thrombosis, impact of routine HIV antibody testing of blood and plasma donors on public health, infectious disease testing for blood transfusions, stem cell therapy, and immune function in sickle cell disease.

To meet its overall responsibilities, the Division maintains an integrated and coordinated program of grants, contracts, training and career development awards, and academic awards. SCORs in thrombosis, transfusion medicine, and hematopoietic stem cell biology and Comprehensive Centers in sickle cell disease are currently being supported.

Division of Epidemiology and Clinical Applications

The DECA has the primary responsibility for epidemiologic studies, clinical trials, prevention studies, and demonstration and education research in heart and vascular, lung, and blood diseases and for basic and applied research in behavioral medicine. The Division identifies research opportunities; stimulates and conducts research on the causes, prevention, diagnosis, and treatment of these diseases; and assesses the need for technologic development in the acquisition and application of research findings in these areas. It evaluates and uses basic and clinical research findings in defined populations (such as occupational groups, school children, health professionals, and minorities) and community settings, with an emphasis on studies of primary and secondary prevention in nonhospitalized patients or populations.

Understanding the significant role that risk factors have in the development of CVD is a major focus of the Division. Epidemiological studies of CVD risk factors in Native Americans and middle-aged blacks, population-based

surveillance studies to monitor and explain trends in risk factors for CVD and trends in CVD morbidity and mortality, and efforts directed toward genetic and nongenetic determinants of CVD risk factors, including molecular genetic studies, are areas of particular interest. Developing techniques to detect and evaluate early CVD onset, so that they can be incorporated into epidemiological studies, is also an important area of investigation. Presently, the DECA is supporting a pilot test within an ongoing population-based study to determine the feasibility of using magnetic resonance imaging and electron beam computed tomography to characterize carotid placques and the prevalence of coronary calcium in large black and white populations. The study will assess the possibility of using a noninvasive assessment to measure subclinical CVD development.

Another area of research being supported by the Division concerns the possibility that several dietary factors, other than the established direct relationships of body weight, salt intake, and alcohol intake and the inverse relationship of potassium intake to blood pressure, may have independent effects on blood pressure. An international epidemiological study will examine the relationship of macronutrients and other dietary factors in the development of unfavorable blood pressure levels in middle-aged and older individuals. Specifically, the association of blood pressure with dietary intake of protein, amino acids, fats, cholesterol, carbohydrates, calcium, magnesium, antioxidants, fiber, and caffeine will be examined.

Clinical trials are a useful approach to test the efficacy of various drug therapies. Currently, a clinical trial is under way to determine whether the combined incidence of nonfatal myocardial infarction (MI) and fatal CHD differs between hypertensives receiving diuretics and those receiving alternative antihypertensive pharmacological treatment. A subset of hypercholesterolemic patients will be studied to determine whether reducing serum cholesterol levels with a lipid-lowering drug decreases the incidence of nonfatal MI and fatal CHD. A clinical trial on the effects of selected diet patterns on blood pressure has just been concluded.

Multicenter clinical trials are being conducted to study the effects of various medical treatments for cardiac problems. Among the issues being investigated are effectiveness of an implantable cardiac defibrillator compared with conventional pharmacological therapy in reducing mortality in patients who have been resuscitated from sudden cardiac death, effect on mortality of beta-blockers compared with standard therapy for chronic congestive heart failure, effect on mortality of two strategies of antiarrhythmic drug therapy in patients with atrial fibrillation, and effect on mortality of an angiotensin-converting enzyme inhibitor in patients with good ventricular function following an MI.

Behavioral studies are an important component of clinical trials and have been included in several intervention projects. Among those being supported by the Division are the following: a multicenter study involving 20 U.S. communities that will examine the effect of communitywide education on reducing the time from onset of cardiac symptoms to receipt of medical care; a study that will evaluate the effectiveness of behavioral interventions, in primary health care settings, to encourage sedentary patients to increase their physical activity; and a study that investigates the effects of psychosocial support on morbidity and mortality in a clinical trial of patients recently hospitalized with acute MI.

National Center on Sleep Disorders Research

The NCSDR was established in response to the NIH Revitalization Act of 1993 (P.L. 103-43). Its role is to support research, research training, health information dissemination, and other activities with respect to sleep disorders and to coordinate these activities with similar ones of other NIH components, Federal agencies, and profit and nonprofit entities.

The Sleep Disorders Research Advisory Board advises the Director, NIH; the Director, NHLBI; and the Director, NCSDR, on planning, executing, and evaluating research in sleep and sleep disorders. One of its functions included jointly preparing a sleep research plan with the NCSDR for the NIH encompassing basic, clinical, and applied research; health education; and prevention-related research in sleep and sleep disorders. This plan was released by the NIH Director in March 1996.

Examples of activities initiated by the NCSDR since its inception include a study using existing

epidemiological cohorts to determine whether sleep apnea is an independent or contributing risk factor for the development of cardiovascular and cerebrovascular disease; a collaboration with the NICHD to establish the Back to Sleep campaign to reduce the risk of sudden infant death syndrome (SIDS); and a partnership for the "Drive Alert . . . Arrive Alive" program with the Department of Transportation (DOT) and the National Sleep Foundation (NSF).

In FY 1996, three new initiatives were released: a SCOR program in the neurobiology of sleep and sleep apnea; a joint project with the National Institute of Mental Health, the National Institute of Child Health and Human Development, and the National Institute of Arthritis and Musculoskeletal and Skin Diseases on the molecular biology and genetics of sleep and sleep disorders; and the Sleep Academic Award. The program announcement on Basic and Clinical Research on Sleep and Wakefulness also remained active.

The Center collaborated and coordinated a number of NIH- and Government-wide activities, including one with the National Aeronautics and Space Administration (NASA) to support research on sleep and microgravity as part of the Neurolab Project. It participated in NIH Workshops on Melatonin and Sleep and on Fibromyalgia and Pain and cosponsored a health and traffic safety symposium on sleepiness and motor vehicle crashes with the DOT and the NSF. In addition, with the DOT, the Center developed plans to convene an expert panel to analyze the role of fatigue, sleep disorders, and inattention in highway crashes and cosponsored an International Narcolepsy Workshop with the NSF and other NIH Institutes.

The Center worked closely with the NHLBI Office of Prevention, Education, and Control (OPEC) on the sleep education program. A number of professional and public/patient education publications were released in 1996. The sleep education program will complete the second series of the sleep apnea mass media campaign; publish factsheets on narcolepsy and restless legs syndrome; and produce messages about daytime sleepiness and sleep deprivation and its consequences, particularly in youth, for the general public. The Center is working closely with the National Highway Traffic Safety Administration on a new education program targeting the sleepy driver.

Division of Intramural Research

The NHLBI DIR conducts clinical research on the normal and pathophysiologic functioning of cardiac, pulmonary, blood, and endocrine systems and basic research on normal and abnormal cellular behavior at the molecular level. The research activities of the 16 laboratories and branches range from structural organic chemistry to cardiology. Major areas of interest include the mechanisms of gene regulation, retroviral-mediated gene transfer, and gene therapy; the molecular basis of lipoprotein dysfunctions and the atherogenic process; the molecular basis of diseases of the alveolar structures of the lung and the design of new therapeutic modalities; the cellular and molecular events underlying ischemic heart disease and myocardial hypertrophy; biochemical events associated with aging and certain pathologic processes; molecular, structural, and developmental aspects of muscle and nonmuscle contractile systems; the biochemistry and physiology of calcium channels; molecular and cellular processes for the conversion of metabolic energy into useful work; the molecular basis of transmembrane signaling; the pathophysiology of renal function at cellular and molecular levels; the biochemistry of trace nutrients; enzyme kinetics, metabolic regulation, and protein chemistry; and the cellular and molecular basis of toxicities induced by drugs and other foreign compounds.

The DIR is located on the 300-acre NIH campus in Bethesda. It has a staff of about 550, including about 225 doctoral-level scientists, 65 of whom are in tenured positions, one Nobel Laureate, and 6 members of the National Academy of Sciences. Approximately 150 guest workers contribute importantly to the research. This combined staff of about 700 occupies a total space of about 115,000 square feet and has the use of 80 beds in the Clinical Center.

Office of Prevention, Education, and Control

The NHLBI Office of Prevention, Education, and Control coordinates the dissemination of research findings and scientific consensus to health professionals, patients, and the public so

that information can be adapted for and integrated into health care practice and individual health behavior. To accomplish its mission, the Office has established health education programs and initiatives that address high blood pressure, high blood cholesterol, obesity, and early warning signs of heart attack, asthma, and sleep disorders. The four largest programs have coordinating committees that consist of national medical, public health, and voluntary organizations, and other Federal agencies. The coordinating committees help to plan, implement, and evaluate program efforts in professional, patient, and public education and spread the programs' messages to a wide range of audiences.

The National High Blood Pressure Education Program (NHBPEP) was initiated in 1972 to reduce death and disability related to high blood pressure. The Program, a cooperative effort between the NHLBI, 44 professional and voluntary health agencies, and state health departments is considered to be the model for national health education programs. In fact, this model has been and continues to be adopted by other national and international groups.

Since its inception, the number of hypertensives aware of their condition has increased fourfold; and four times as many hypertensives are treating and controlling their disease. Recent data from the National Health and Nutrition Examination Survey (NHANES III) indicate that over the past three decades, mean systolic blood pressure has declined by 10 mm Hg. In addition, age-adjusted mortality rates from heart disease and stroke have fallen by 50 and 60 percent, respectively.

Dissemination of national guidelines on the prevention of high blood pressure is a major priority of the NHBPEP. Recently two new guidelines, *Hypertension in Children and Adolescents* and *Hypertension and Renal Disease,* have become available. The guidelines for children provide new criteria for classification of high blood pressure in young age groups. A statement on high blood pressure and the need to reduce salt consumption was released by the Program and was accepted by the U.S. Dietary Guidelines Committee. This year, the *Report of the Joint National Committee on the Detection, Evaluation, and Treatment of High Blood Pressure* is being updated and should be completed in the fall of 1997. It will address the use of new drug therapies, management of special populations and situations, and patient advocacy and rights.

Additional program priorities include identifying partners who can help implement population strategies for disease prevention; developing a network of organizations that serve as advocates for older Americans to improve hypertension control among this population; improving blood pressure control among elderly women (with special emphasis on preventing congestive heart failure), low-income and minority populations, and those who are underserved by the health care system; and reducing mortality from stroke in targeted populations such as those in the "stroke belt," that is, the cluster of Southeastern states that have high rates of stroke mortality. The NHBPEP has also expanded its mass media campaign to include displaying messages on billboards in the inner city, posters on mass transit systems, and radio messages for urban inner-city populations.

The National Cholesterol Education Program (NCEP) was initiated in 1985 to educate health professionals and the public about high blood cholesterol as a risk factor for CHD and about the benefits of lowering cholesterol levels to reduce illness and death from CHD. As shown by the results from the 1995 Cholesterol Awareness Survey of physicians and the public, in its 10 years of existence, the NCEP has made significant progress toward its goal of reducing the prevalence of high blood cholesterol. From 1983 to 1995, the percentage of the public who ever had their cholesterol checked rose from 35 to 75 percent, so that 70 to 80 million Americans who were unaware of their cholesterol level in 1983 knew it in 1995. In 1995, physicians reported initiating diet and drug treatment at much lower cholesterol levels than in 1983, levels close to NCEP recommendations, and major elements of the NCEP guidelines for detection and treatment have become established practice. Results from the NHANES III also reveal important progress. They show that, from 1978 to 1990, the public's intake of fat and saturated fat decreased significantly, resulting in impressive declines in average blood cholesterol levels (from 213 mg/dL to 205 mg/dL) and in the prevalence of high blood cholesterol in the U.S. population (from 36 to 29 percent).

The NCEP has pursued a dual strategy for educating the American people on the importance of blood cholesterol reduction. One strategy is directed toward individuals whose high blood cholesterol places them at increased risk for CHD and emphasizes the need for detection and treatment. The other strategy is directed at the general public and encourages heart-healthy eating patterns to lower average cholesterol levels.

Results from three recent clinical trials provide conclusive evidence that cholesterol lowering dramatically reduces heart attacks, CHD deaths, and overall death rates in patients with or without existing CHD. As part of its focus on CHD patients, the NCEP cooperated in the development of a PBS television special on cholesterol lowering in people with CHD that was aired initially in September 1996 during National Cholesterol Education Month. The program also directed its attention to women, older adults, and the general public. More than 115 stations have agreed to air the show. A new booklet, *Live Healthier, Live Longer,* was developed to help CHD patients lower their cholesterol. As part of its efforts to prevent the development of CHD in the first place, the NCEP produced a new series of public service announcements to encourage individuals to adopt heart-healthy habits, including a low saturated fat diet, physical activity, and weight control, and to have their cholesterol levels checked and know their numbers.

The National Asthma Education and Prevention Program (NAEPP) was initiated in March 1989 to raise the awareness of asthma as a serious, chronic disease and to promote more effective management of asthma through professional, patient, and public education, and to provide up-to-date information on asthma care. Presently, it is revising the *Expert Panel's Report on the Diagnosis and Management of Asthma*, which provides the science base for the Program. The NAEPP is also assisting in implementation of the Panel's recommendations by providing materials developed for this purpose. Included is a speaker's kit on the recommendations to be used in workshops or training sessions by health care professionals; an asthma awareness curriculum for elementary schools to increase student knowledge of asthma management and control; a guide and a video on physical education in schools; a report directed to pharmacists titled *The Role of the Pharmacist in Improving Asthma Care;* and a guide for nurses called *Nurses: Partners in Asthma Care.* The NAEPP's *Task Force Report on the Cost-Effectiveness, Quality, and Financing of Asthma Care* was recently published in a professional journal.

The National Heart Attack Alert Program (NHAAP) was initiated in June 1991 to reduce morbidity and mortality from acute myocardial infarction (AMI) and sudden death through education of health professionals (e.g., physicians, nurses, and emergency medical services personnel) and patients about the importance of rapid identification and treatment of individuals with heart attack symptoms and signs. To date, the Program has developed recommendations for emergency department management of individuals presenting with characteristic signs of AMI. It has also prepared background papers on 911 emergency telephone systems; staffing and equipment requirements for emergency medical services systems; recommended emergency medical dispatching processes and procedures; and identified factors associated with patient/bystander delay in seeking care for AMI manifestations. The NHAAP developed recommendations for health care providers in emergency departments about current and new tests/technologies for detecting AMI (including acute cardiac ischemia). In addition, it prepared a paper for providers of high-risk patients about educational strategies to reduce prehospital delay in patients at high risk for an AMI. A paper addressing community planning considerations to ensure access to timely and appropriate care of individuals with acute cardiac ischemia is being finalized.

The NHLBI Obesity Education Initiative (OEI) was started in January 1991 to inform the public and health professionals on the health risks associated with overweight and obesity. Obesity is not only an independent risk factor for CVD but also a contributor to high blood pressure and high blood cholesterol and is related to sleep apnea. The OEI, as part of its high-risk strategy, convened an expert panel to consider the scientific evidence related to identification, evaluation, and treatment of obesity in adults, especially those with other risk factors for CVD. Together with the NIDDK's National Task Force on the Prevention and Treatment of Obesity, the panel will develop clinical practice guidelines for use by practicing physicians and other health care providers. The

report is expected to be released at the National Conference on Cardiovascular Health: Coming Together for the 21st Century, which is scheduled for February 1998.

Two other crosscutting activities were coordinated by the OPEC. The NHLBI and the NIH Office of Medical Applications of Research cosponsored the NIH Consensus Development Conference on Physical Activity and Cardiovascular Health in December 1995. The purpose of the Conference was to examine accumulating evidence on the role of physical activity in the prevention and treatment of CVD and its risk factors and to produce a consensus statement. The panel concluded that Americans can reduce their CVD risk by engaging in 30 minutes of daily or near daily physical activity of moderate intensity. The complete consensus statement was published in the *Journal of the American Medical Association*, July 17, 1996, and as an appendix in the *Surgeon General's Report on Physical Activity and Health.* The Cardiovascular Health Promotion Project (CHPP) was created to promote heart-healthy behaviors in children and adolescents as a means of preventing overweight, high blood pressure, and high blood cholesterol. The Institute began the Project by convening a workshop of prominent researchers to determine how the lessons learned from scientific studies could be used to encourage healthy behaviors in children. Their conclusions were featured in a summer 1996 special edition of the NHLBI's *HeartMemo.* Other CHPP activities that followed include a national communication campaign that combines community outreach and media promotions to encourage children and their families to engage in regular physical activity and the development of partnerships with other groups and organizations interested in the promotion of cardiovascular health. The National Recreation and Park Association has joined the CHPP project as an important partner.

The NHLBI Ad Hoc Committee on Minority Populations was established in 1975 to facilitate communication between minority communities and the NHBPEP. As the NHLBI developed new education and prevention programs, the role of the Ad Hoc Committee was expanded. Today, the Ad Hoc Committee provides direct input to the NHLBI regarding the development and implementation of all outreach and education projects specifically designed to improve the health status of minority populations.

The NHLBI and the Office of Research on Minority Health (ORMH), NIH, are currently collaborating on several projects associated with improving cardiovascular health of blacks and Latinos. One such project is the National Physicians' Network, which encourages physicians who provide care to blacks to become more actively involved in prevention and education activities in black communities. Members of the Association of Black Cardiologists and the National Medical Association are partners in the implementation of this project.

Results from a second project, *The NHLBI Report of the Working Group on Research in Coronary Heart Disease in Blacks,* indicated that, even when controlling for socioeconomic, demographic, and medical care factors, blacks are less knowledgeable about CHD symptoms, risk factors, and methods of prevention than whites. To address these issues, the NHLBI and the ORMH are collaborating with historically black colleges and universities, particularly those with medical schools and allied health programs, to conduct forums to share the latest research and treatment information to prevent and control CVD risk factors.

The third project, the Latino CVD Prevention and Outreach Initiative, "Salud para su Corazon," (Health for Your Heart), is a comprehensive community-based health promotion project designed to raise awareness of CVD prevention and promote heart-healthy lifestyles among Latinos in the Washington, DC, metropolitan area. This model project will provide the foundation for similar health campaigns in Latino communities across the Nation.

International Activities

International cooperation is an important adjunct to the NHLBI's national biomedical research programs. It facilitates rapid transfer and exchange of new ideas and knowledge between scientists in different parts of the world and can significantly accelerate the pace of research and of health promotion and disease prevention activities.

Starting in 1972, the NHLBI initiated a series of international research agreements in areas of

mutual interest and benefit. Designated areas of high national and scientific priority for joint research have been selected with corresponding institutes in other nations. The objectives are to reduce mortality and morbidity from heart, lung, and blood diseases, which, despite significant advances in recent decades, continue to affect hundreds of millions of people throughout the world. The global burden of heart, lung, and blood diseases in terms of suffering and economic costs amounts to hundreds of billions of dollars annually. Important scientific gains are documented in the Institute's annual reports on international activities.

Major contributions to international health policies have resulted from the Institute's prevention programs. For example, the NHLBI's guidelines on hypertension, cholesterol, and asthma have been translated into several languages for use in many countries. Many comparative multinational studies have been published as a result of NHLBI's guidance and support. These studies highlight important opportunities for preventing CVDs even in the absence of a precise understanding of etiologies. Although some forms of disease are congenital, the vast majority of CVDs result from an interaction between a genetic predisposition and one or more risk factors. It has been demonstrated that reducing risk factors through multidisciplinary interventions can result in decreases in CVD morbidity and mortality. High on the list of culpable risk factors are smoking, high blood cholesterol, high blood pressure, obesity, diabetes, and lack of physical activity. The efficacy of interventions currently under evaluation include population targeting, community programs, multimedia campaigns, and programs in schools and worksites.

During FY 1996, the NHLBI international programs included exchanges of scientists and data, joint research projects, comparisons of epidemiological data, joint working meetings, and joint publications. These activities have contributed to the NHLBI's plans for future directions of national programs because rapid progress in science as well as dramatic changes in the international political sphere often provide new opportunities for joint research.

Presently, the NHLBI collaborates with more than 20 countries under international agreements. Cooperation with Russia continues, and plans for joint research with scientists from the newly independent states of Kyrgyzstan and Georgia are also under way. Studies continue with Pakistan, and new activities are planned with scientists from Vietnam, Italy, and South Africa. Other cooperative programs include those with Germany, Hungary, Poland, China, Japan, the Czech Republic, Korea, and India.

The Institute has assumed an international leadership role in key areas related to the NHLBI mission. NHLBI staff serve as consultants to the World Health Organization (WHO), the Pan American Health Organization, and other international organizations and contribute to worldwide plans for the prevention and control of cardiovascular, pulmonary, and blood diseases in both developed and developing countries. The Institute also serves as a WHO Collaborating Center for Cardiovascular Research and Training for the Americas and provides information and data for use throughout the world.

NHLBI collaborative programs with China, Germany, Poland, and Georgia provide evidence that cardiovascular and pulmonary prevention programs, similar to those successfully implemented in the United States, can be adapted to other countries. For instance, the Institute's international collaboration in hypertension control is expected to serve as a model for future infrastructure building and cost-effective health care approaches to CVD and other emerging chronic disease problems.

The NHLBI is actively participating in Gore-Chernomyrdin Commission efforts to improve health care through the development of joint projects on prevention. The Institute's contributions build on the success of the NHBPEP and the NAEPP. The strategies of the Institute's NAEPP have been tested and adapted to the unique cultural and economic conditions of post-Soviet Russia with promising results.

During FY 1996, the Institute continued to develop further contacts with scientists in the Middle East. As a result of prior U.S.-Egypt collaboration, a second Pan Arab Conference on Hypertension was held in Lebanon, and a third conference is planned in Saudi Arabia in 1997. Contacts with sub-Saharan Africa are also being developed, particularly with South Africa. Plans

for exchanges of scientists, information, and data on hypertension are under way, including a U.S.-South African Workshop on Hypertension in Black Populations held in South Africa in December 1996.

3. Important Events

June 16, 1948. President Harry S Truman signs the National Heart Act, creating the National Heart Institute (NHI) 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 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 (CVD) 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, PHS, to the NHI.

January 18-20, 1950. The NHI and the American Heart Association jointly sponsor the first National Conference on Cardiovascular Diseases 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 Director of NHI, succeeding Dr. Van Slyke, who is appointed 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 with approval from President Lyndon B. Johnson.

November 22-24, 1964. The Second National Conference on Cardiovascular Diseases, cosponsored by the American Heart Association, the NHI, and the Heart Disease Control Program of the PHS, is held 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. An FY 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 are 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 the 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 thrombotic and hemorrhagic diseases); a Therapeutic Evaluations Branch and an 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.

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 the National Sickle Cell Disease Program at the NIH and NHLI.

June 1971. The Task Force on Arteriosclerosis, convened by Dr. Cooper, presents its report. Volume I addresses general aspects of the problem and presents the major conclusions and recommendations in nontechnical language. Volume II contains technical information on the 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 1972. The NHLI launches its National High Blood Pressure Education Program (NHBPEP), a program of patient and professional education that has as its goal to reduce death and disability related to high blood pressure.

July 14, 1972. Secretary Richardson approves reorganization of the NHLI, with the Institute elevated 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 on the diseases within its mandate. The act calls for intensified and coordinated Institute activities to be planned by the Director and reviewed by the National Heart and Lung 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 them.

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 NHLI 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 NHLBI, with continued emphasis on both the National Program and related prevention and dissemination activities.

February 1978. The NHLBI and the American Heart Association jointly celebrate their 30th anniversary.

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

November 1979. The results of the Hypertension Detection and Followup 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 NHLBI for its Hypertension Detection and Followup 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 NHLBI, 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 presents conclusions and recommendations in nontechnical language. Volume II provides an in-depth substantive 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 with the control group.

July 6, 1982. Dr. Claude Lenfant is appointed Director of the NHLBI. He succeeds Dr. Robert I. Levy.

September 1982. The results of the Multiple Risk Factor Intervention Trial are released. They support measures to reduce cigarette smoking and to lower blood cholesterol to prevent coronary heart disease (CHD) mortality but raise questions about optimal treatment of mild hypertension.

October 26, 1983. The Coronary Artery Surgery Study (CASS) results are released. They demonstrate that mildly symptomatic patients with coronary artery disease can safely defer coronary artery bypass surgery until symptoms worsen.

January 12, 1984. The results of the Lipid Research Clinics Coronary Primary Prevention Trial (LRC-CPPT) are released. They establish conclusively that reducing total blood cholesterol reduces the risk of CHD in men at increased risk because of elevated cholesterol levels. Each 1 percent decrease in cholesterol can be expected to reduce heart attack risk by 2 percent.

April-September 1984. The *Tenth Report of the Director, NHLBI,* commemorates the 10th anniversary of the passage of the National Heart, Blood Vessel, Lung, and Blood Act. The five-volume publication reviews 10 years of research progress and presents a 5-year research plan for the National Program.

April 1984. The Division of Epidemiology and Clinical Applications is created. It provides the Institute with a single focus on clinical trials; prevention, demonstration, and education programs; behavioral medicine; nutrition; epidemiology; and biometry. It also provides new opportunities to examine the interrelationships of cardiovascular, respiratory, and blood diseases.

November 1984. An NHLBI-NIH Clinical Center interagency agreement for studies on the transmission of human immunodeficiency virus (HIV-1) from humans to chimpanzees leads to the first definitive evidence that the transmission is by blood transfusion.

April 1985. Results of Phase I of the Thrombolysis in Myocardial Infarction (TIMI) trial comparing streptokinase (SK) with recombinant tissue plasminogen activator (rt-PA) produced by recombinant means are published. The new thrombolytic agent rt-PA is approximately twice as effective as SK in opening thrombosed coronary arteries.

October 1985. The NHLBI Smoking Education Program is initiated to increase health care provider awareness about clinical opportunities for smoking cessation programs, techniques for use within health care settings, and resources for use within communities to expand and reinforce such efforts.

November 1985. The NHLBI inaugurates the National Cholesterol Education Program (NCEP)

to increase awareness among health professionals and the public that elevated blood cholesterol is a cause of CHD and that reducing elevated blood cholesterol levels will contribute to the reduction of CHD.

June 1986. Results of the Prophylactic Penicillin Trial demonstrate the efficacy of prophylactic penicillin therapy in reducing the morbidity and mortality associated with pneumococcal infections in children with sickle cell disease.

September 18, 1986. The NHLBI sponsors events on the NIH campus in conjunction with the meeting of the X World Congress of Cardiology in Washington, DC. Activities include a special exhibit at the National Library of Medicine entitled "American Contributions to Cardiovascular Medicine and Surgery" and two symposia—"New Dimensions in Cardiovascular Disease Research" and "Cardiovascular Nursing and Nursing Research."

December 17, 1986. The citizens of Framingham, Massachusetts, are presented a tribute by the Assistant Secretary for Health, Health and Human Services (HHS), for their participation in the Framingham Heart Study over the past 40 years.

September 1987. The NHLBI commemorates the centennial of the NIH and the 40th anniversary of the Institute's inception. Two publications prepared for the Institute's anniversary, *Forty Years of Achievement in Heart, Lung, and Blood Research* and *A Salute to the Past: A History of the National Heart, Lung, and Blood Institute*, document significant Institute contributions to research and summarize recollections about the Institute's 40-year history.

October 1987. The National Blood Resource Education Program is established to ensure an adequate supply of safe blood and blood components to meet the Nation's needs and to ensure that blood and blood components are transfused only when therapeutically appropriate.

April 1988. The NHLBI initiates its Minority Research Supplements program to provide supplemental funds to ongoing research grants for support of minority investigators added to research teams.

September 1988. Acquired immunodeficiency syndrome research is added to the National Heart, Blood Vessel, Lung, and Blood Diseases and Blood Resources Program. It is the first area of research to be added since the Program was established in 1973.

September 1988. The NHLBI funds the first of its new Programs of Excellence in Molecular Biology, designed to foster the study of the organization, modification, and expression of the genome in areas of importance to the Institute and to encourage investigators to become skilled in the experimental strategies and techniques of modern molecular biology.

September 1988. The Strong Heart Study is initiated. It focuses on CVD morbidity and mortality rates and distribution of CVD risk factors in three geographically diverse Native American groups.

October 1988. The National Marrow Donor Program is transferred from the Department of the Navy to the NHLBI. The Program, which serves as a focal point for bone marrow research, includes a national registry of volunteers who have offered to donate marrow for transplant to patients not having suitably matched relatives.

March 1989. The NHLBI initiates a National Asthma Education Program to raise awareness of asthma as a serious chronic disease and to promote more effective management of asthma through patient and professional education.

May 1989. The NHLBI Minority Access to Research Careers (MARC) Summer Research Training Program is initiated to provide an opportunity for MARC Honors Scholars to work with researchers in the NHLBI intramural laboratories.

September 14, 1990. The first human gene therapy protocol in history is undertaken at NIH. A team of scientists, led by W. French Anderson, NHLBI, and R. Michael Blaese, National Cancer Institute, insert a normal gene into a patient's cells to compensate for a defective gene that left the patient's cells unable to produce an enzyme essential to the functioning of the body's immune system.

January 1991. The NHLBI Obesity Education Initiative begins. Its objective is to make a concerted effort to educate the public and health professionals about obesity as an independent risk factor for CVD and its relationship to other risk factors such as high blood pressure and high blood cholesterol.

February 1991. The expert panel of the National Asthma Education Program releases its report, *Guidelines for Diagnosis and Management of Asthma,* to educate physicians and other health care providers in asthma management.

April 8-10, 1991. The First National Conference on Cholesterol and Blood Pressure Control is attended by more than 1,800 health professionals.

May 1991. The Task Force on Hypertension, established in November 1989 to assess the state of hypertension research and to develop a plan for future NHLBI funding, presents its conclusions. The report outlines a set of scientific priorities and develops a comprehensive plan for support over the next several years.

June 11, 1991. The NHLBI initiates a National Heart Attack Alert Program to reduce premature morbidity and mortality from acute myocardial infarction and sudden death. The Program emphasizes rapid disease identification and treatment.

July 1991. Results of the Systolic Hypertension in the Elderly Program (SHEP) demonstrate that low-dose pharmacologic therapy of isolated systolic hypertension in those older than age 60 years significantly reduces stroke and MI.

August 1991. Results of the Studies of Left Ventricular Dysfunction are released. They demonstrate that use of the angiotensin-converting enzyme inhibitor enalapril causes a significant reduction in mortality and hospitalization for congestive heart failure in patients with symptomatic heart failure.

August 1991. The NHLBI sponsors the first national workshop, "Physical Activity and Cardiovascular Health: Special Emphasis on Women and Youth," to assess the current knowledge in the field and to develop scientific priorities and plans for support. Recommendations from the Working Groups are published in the supplemental issue of *Medicine and Science in Sports and Exercise.*

March 1992. The *International Consensus Report on Diagnosis and Management of Asthma* is released. It is to be used by asthma specialists and medical opinion leaders to provide a framework for discussion of asthma management pertinent to their respective countries.

March 1992. Results of the Trials of Hypertension Prevention Phase I are published. They demonstrate that both weight loss and reduction of dietary salt reduce blood pressure in adults with high normal diastolic blood pressure and may reduce the incidence of primary hypertension.

June 26-27, 1992. The Fourth National Minority Forum on Cardiovascular Health, Pulmonary Disorders, and Blood Resources is attended by nearly 600 individuals.

October 11-13, 1992. The First National Conference on Asthma Management is attended by more than 900 individuals.

October 30, 1992. A celebration of the 20th anniversary of the NHBPEP is held in conjunction with the NHBPEP Coordinating Committee meeting. The *Fifth Report of the Joint National Committee on the Detection, Evaluation, and Treatment of High Blood Pressure* (JNC V) and the *NHBPEP Working Group Report on the Primary Prevention of Hypertension* are released at the accompanying press conference.

June 10, 1993. The NIH Revitalization Act of 1993 (P.L. 103-43) establishes the National Center on Sleep Disorders Research within the NHLBI.

June 15, 1993. The *Second Report of the Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults* (ATP II) is released to the public at a press conference held in conjunction with the NCEP Coordinating Committee meeting.

January 30, 1995. Results of the Multicenter Study of Hydroxyurea are released through a clinical alert. They demonstrate that hydroxyurea reduced the number of painful episodes by 50 percent in severely affected adults with sickle cell

disease. This is the first effective treatment for adult patients with this disorder.

September 1995. The NHLBI funds a new Program of Specialized Centers of Research in Hematopoietic Stem Cell Biology, which is designed to advance our knowledge of stem cell biology and enhance our ability to achieve successful stem cell therapy to cure genetic and acquired diseases.

September 21, 1995. Results of the Bypass Angioplasty Revascularization Investigation are released through a clinical alert. They demonstrate that patients on drug treatment for diabetes who had blockages in two or more coronary arteries and were treated with coronary artery bypass graft (CABG) surgery had, at 5 years, a death rate markedly lower than that of similar patients treated with angioplasty. The clinical alert recommends CABG over standard angioplasty for patients on drug therapy for diabetes who have multiple coronary blockages and are first-time candidates for either procedure.

November 5-6, 1995. The first Conference on Socioeconomic Status (SES) and Cardiovascular Health and Disease is held to determine future opportunities and needs for research on SES factors and their relationships with cardiovascular health and disease.

December 4-5, 1995. A celebration of the 10th anniversary of the NCEP is held in conjunction with the NCEP Coordinating Committee meeting. Results of the 1995 Cholesterol Awareness Surveys of physicians and the public are released at the accompanying press conference.

May 21, 1996. The NHLBI announces results from the Framingham Heart Study that conclude earlier and more aggressive treatment of hypertension is vital to preventing congestive heart failure. Lifestyle changes, such as weight loss, a healthy eating plan, and physical activity, are crucial for reducing blood lipids in those treated for Stage I hypertension.

September 1996. The *Report of the Conference on Socioeconomic Status and Cardiovascular Health and Disease* is released.

September 1996. Findings from the Asthma Clinical Research Network show that for people with asthma, taking an inhaled beta-agonist at regularly scheduled times is safe but provides no greater benefit than taking the medication only when asthma symptoms occur. The recommendation to physicians who treat patients with mild asthma is to prescribe inhaled beta-agonists only on an as-needed basis.

November 13, 1996. The NHLBI releases findings from two studies that show lifestyle changes, such as modifying one's diet and losing weight, substantially reduce blood pressure in adults and can keep older patients off antihypertensive medication.

4. Disease Statistics

Cardiovascular, lung, and blood diseases constitute a large morbidity, mortality, and economic burden on individuals, families, and the Nation. Common forms are atherosclerosis, particularly coronary heart disease (CHD) (heart attack) and cerebrovascular disease (stroke); hypertension; chronic obstructive pulmonary disease (COPD); asthma; and the blood-clotting disorders: embolisms and thromboses. Because many of the diseases begin early in life, their early detection and control can reduce the risk of disability and delay death.

Together, all cardiovascular, lung, and blood diseases accounted for 1,188,000 deaths in 1995 and 51 percent of all deaths in the United States. The projected economic costs in 1997 are expected to be $383 billion, 25 percent of the total economic costs of illness, injuries, and death (pp. 31, 44). Heart disease is the leading cause of death, cerebrovascular disease is third (behind cancer), and COPD ranks fourth (p. 33). Cardiovascular and lung diseases account for 3 of the 10 leading causes of deaths, 6 of the 10 leading causes of infant deaths, and 5 of the 13 leading chronic conditions causing limitation of activity, and 5 of the leading chronic conditions causing bed disability days (pp. 33, 34, 40).

From 1985 to 1995, the age-adjusted death rate declined 23 percent for heart disease (29 percent for the major form, CHD) and 18 percent for stroke, but there was a 12 percent increase in mortality from COPD and a 23 percent increase for asthma (p. 35). Although improvement in mortality from cardiovascular diseases (CVD) has been extraordinarily great during the past 30 years, morbidity from these diseases remains high.

Cardiovascular Diseases

- Cardiovascular diseases caused 962,000 deaths in 1995, 42 percent of all deaths (p. 31). Most were due to atherosclerosis (p. 32).
- Heart disease is the leading cause of death; the main form is CHD, which caused 482,000 deaths in 1995 (pp. 32, 33).
- Heart disease is second only to all cancers combined in years of potential life lost (p. 33).
- Cerebrovascular disease is the third leading cause of death. It caused 158,000 deaths in 1995 (pp. 32, 33).
- Among minority groups, heart disease ranks first and stroke ranks fifth or higher as the leading causes of death (p. 33).
- Death rates decreased significantly for heart disease and stroke from 1985 to 1995 but increased for COPD and asthma during the same period (p. 35).
- Between 1984 and 1994, the percent decline in death rates for CHD was greatest among white males and least among black females. For COPD and asthma, the percent increases were greater in females than in males (p. 35).
- Because of the rapid decline in mortality from CHD since its peak in 1963, there were 594,000 fewer deaths from this cause in 1995 than would have occurred if there had been no decline (p. 36).
- In 1994, among 36 industrialized countries, the United States ranked 16th in CVD mortality in both middle-aged men and middle-aged women (p. 37).
- Declines in death rates for CVD contributed to 92 percent of the decline in total mortality between 1975 and 1995 (p. 38).
- Despite these improvements in mortality, almost one-fourth of persons ages 40 to 49 and 77 percent of persons ages 80 and older have some form of CVD (p. 38).
- An estimated 57.5 million persons in the United States have some form of CVD (p. 39); most (50 million) have hypertension, but nearly 14 million have CHD (p. 39).
- Rates of hospitalization for congestive heart failure increased between 1971 and 1994 (p. 39).
- Heart disease, hypertension, and cerebrovascular disease rank among the leading chronic conditions causing limitation of activity and bed disability days (p. 40).

- Except for an increase in the percent of the population who are overweight, the prevalence of high cholesterol, hypertension, and smoking declined appreciably (p. 41).
- Hypertension is a highly prevalent condition that is more common in blacks than in whites (p. 41).
- The percent of hospitalized CVD patients who were discharged dead declined markedly between 1974 and 1994 (p. 42).
- The estimated economic cost of CVD is expected to be $259 billion in 1997:
  - — $158 billion in direct health expenditures.
  - — $25 billion in indirect cost of morbidity.
  - — $76 billion in indirect cost of mortality (p. 44).

Lung Diseases

- Lung diseases, excluding lung cancer, caused an estimated 228,000 deaths in 1995 (p. 31).
- Chronic obstructive pulmonary disease caused 99,000 deaths in 1995 and is the fourth leading cause of death (pp. 32, 33).
- The four leading causes of infant mortality are lung diseases or have a lung disease component; rates declined between 1985 and 1995 for three of them:
  - — Congenital anomalies (-26%).
  - — Sudden infant death syndrome (-40%).
  - — Respiratory distress syndrome (-62%).
  - — Disorders relating to short gestation (+13%) (p. 34).
- Lung diseases account for 46 percent of all deaths under 1 year of age in 1994 (p. 34).
- Between 1985 and 1995, the total death rate for COPD increased by 13 percent in contrast with declines for other major causes except lung cancer (p. 35); however, the age-specific trend in COPD is downwards for men under age 75 years and for women under age 45 years (not shown).
- Between 1984 and 1994, the percent increase in death rate for COPD and asthma was greater in women than in men (p. 35).
- Asthma and emphysema are among the leading chronic conditions causing limitation of activity (p. 40).
- Asthma is the fourth leading chronic condition causing bed disability days (p. 40).
- Asthma and chronic bronchitis are present in at least 5 percent of the population in each age group from childhood to adulthood (p. 42).
- Among 28 industrialized countries, the United States ranked 12th for COPD mortality in men ages 35 to 74 years and 7th in women in that age group in 1993 (p. 43).
- Between 1984 and 1994, the prevalence of asthma increased for all age groups (p. 43). Presently, 14.6 million Americans have the disease.
- The estimated economic cost of these lung diseases is expected to be $114.7 billion in 1997:
  - — $78 billion in direct health expenditures.
  - — $20 billion in indirect cost of morbidity.
  - — $16 billion in indirect cost of mortality (p. 44).

Blood Diseases and Resources

- An estimated 268,000 deaths, 12 percent of all deaths, were attributed to diseases of the blood in 1995. This includes:
  - — 259,000 due to blood-clotting disorders.
  - — 7,000 due to diseases of the red blood cell.
  - — 2,000 due to bleeding disorders (pp. 31, 32).
- A large proportion of the deaths from acute myocardial infarction and cerebrovascular disease involve blood-clotting problems (p. 32).
- In 1997, blood-clotting disorders will cost the Nation's economy $64 billion, and other blood diseases will cost $10 billion (p. 44).
- In 1989, 13 million units of blood were collected from almost 9 million donors (not shown).
- In 1989, approximately 20 million units of blood products were transfused to 4 million patients (not shown).

Total Deaths and Deaths From Cardiovascular, Lung, and Blood Diseases, U.S., 1975 and 1995

Cause of Death	1975 Number of Deaths	1975 Percent of Total	1995 Number of Deaths	1995 Percent of Total
All Causes	1,893,000	100	2,312,000	100
All Cardiovascular, Lung, and Blood Diseases	1,133,000	60	1,188,000	51
Cardiovascular Diseases (CVD)	995,000	53	962,000	42
Blood	383,000*	20	268,000‡	12
Lung	146,000†	8	228,000†	10
All Other Causes	760,000	40	1,124,000	49

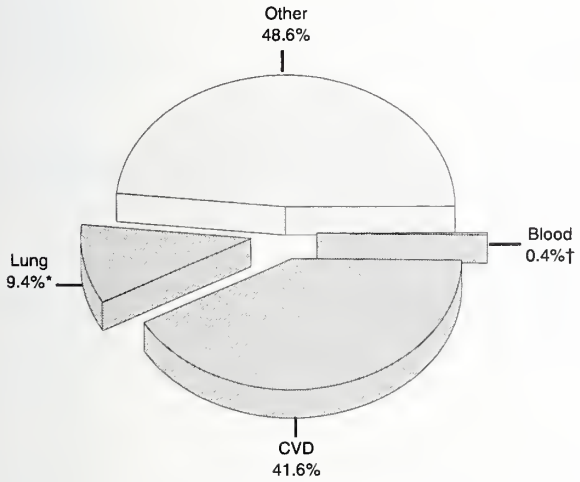
* Includes 378,000 CVD deaths involving blood clotting.

† Includes 13,000 CVD deaths due to pulmonary heart disease in 1975 and 12,000 in 1995.

‡ Includes 259,000 CVD deaths involving blood-clotting disease.

Source: Vital statistics of the U.S., National Center for Health Statistics (NCHS). Figures for 1995 are estimated by the NHLBI.

Total Deaths by Major Causes, U.S., 1995



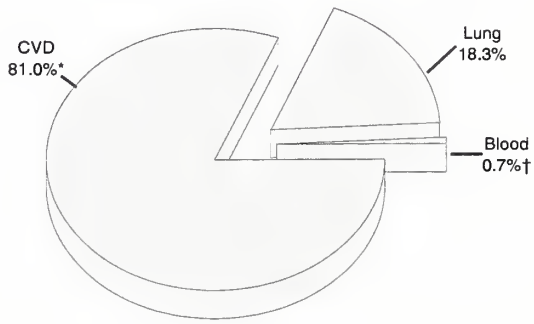
Total Cardiovascular, Lung, and Blood Diseases 51.4%.

* Excludes deaths from pulmonary heart disease.

† Excludes deaths from blood-clotting disorders and pulmonary embolism (12.3%).

Note: Numbers may not add to total due to rounding.

Cardiovascular, Lung, and Blood Disease Deaths, U.S., 1995



* CVD involving blood clotting (22.0%).

† Pulmonary heart disease included with CVD.

Estimated Number of Deaths From Specific Cardiovascular, Lung, and Blood Diseases, U.S., 1995

Cause of Death	Deaths (Thousands)		
	Cardiovascular	Lung	Blood
Acute Myocardial Infarction	219	—	149*
Other Coronary Heart Disease	263	—	—
Cerebrovascular Diseases (Stroke)	158	—	98*
Other Atherosclerosis	43	—	3*
Pulmonary Embolism	9	9*	9*
Other Cardiovascular Diseases	270	2*	—
Diseases of the Red Blood Cell	—	—	7
Bleeding Disorders	—	—	2
Chronic Obstructive Pulmonary Disease	—	99	—
Asthma	—	6	—
Other Airway Diseases	—	1	—
Pneumonia and Influenza	—	84	—
Neonatal Pulmonary Disorders	—	14	—
Interstitial and Inhalation Lung Diseases	—	8	—
Other Lung Diseases	—	5	
Total†	**962**	**228**	**268**

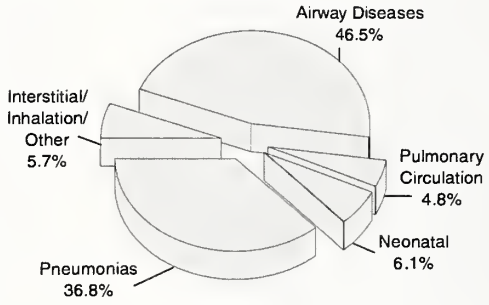
* Deaths from clotting or pulmonary disorders also included as cardiovascular deaths.

† Numbers may not add to total due to rounding.

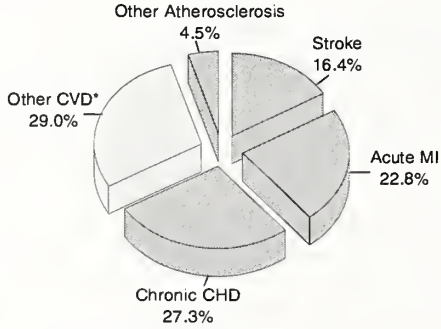
Note: Total, excluding overlap, is 1,188,000.

Source: Vital statistics of the U.S., NCHS. Figures shown are estimated by the NHLBI.

Deaths From Lung Diseases, U.S., 1995



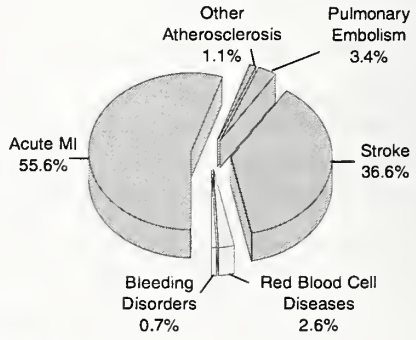
Deaths From Cardiovascular Diseases, U.S., 1995



Atherosclerosis-Related Diseases 71%

* Includes pulmonary embolism, cardiac failure, cardiac dysrhythmias, hypertensive disease, and other heart and blood vessel diseases.

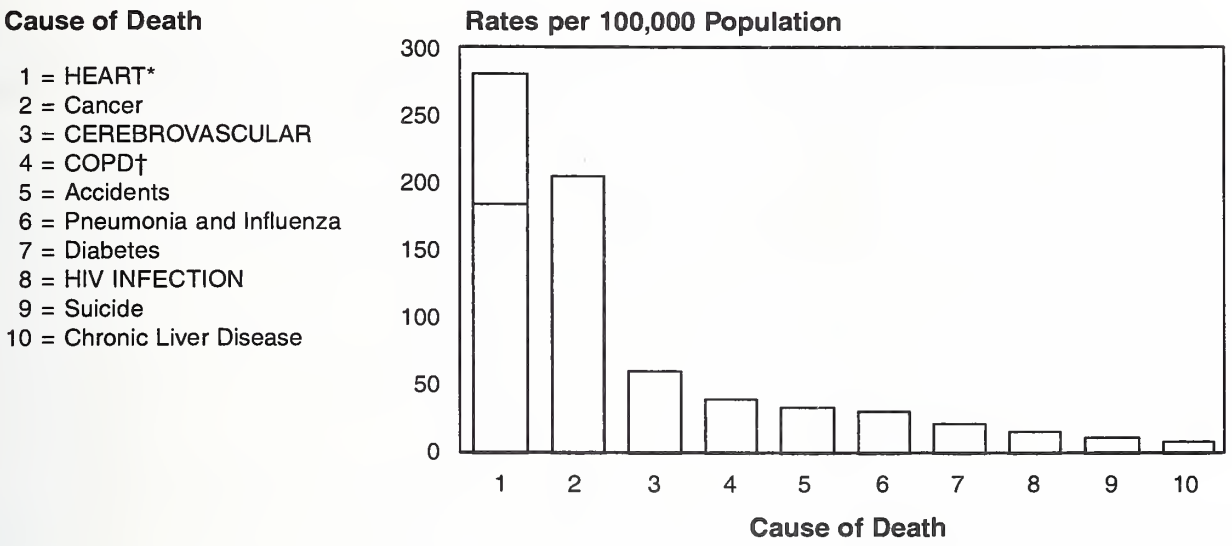
Deaths From Blood Diseases, U.S., 1995



Blood-Clotting Disorders 96.7%

Source: Vital statistics of the U.S., NCHS. Figures shown are estimated by the NHLBI.

10 Leading Causes of Death: Death Rates, U.S., 1995



Years of potential life lost (millions)‡	3.5	4.3	0.6	0.4	2.7	0.3	0.4	1.3	1.0	0.4

* Includes 184 deaths per 100,000 population from CHD.

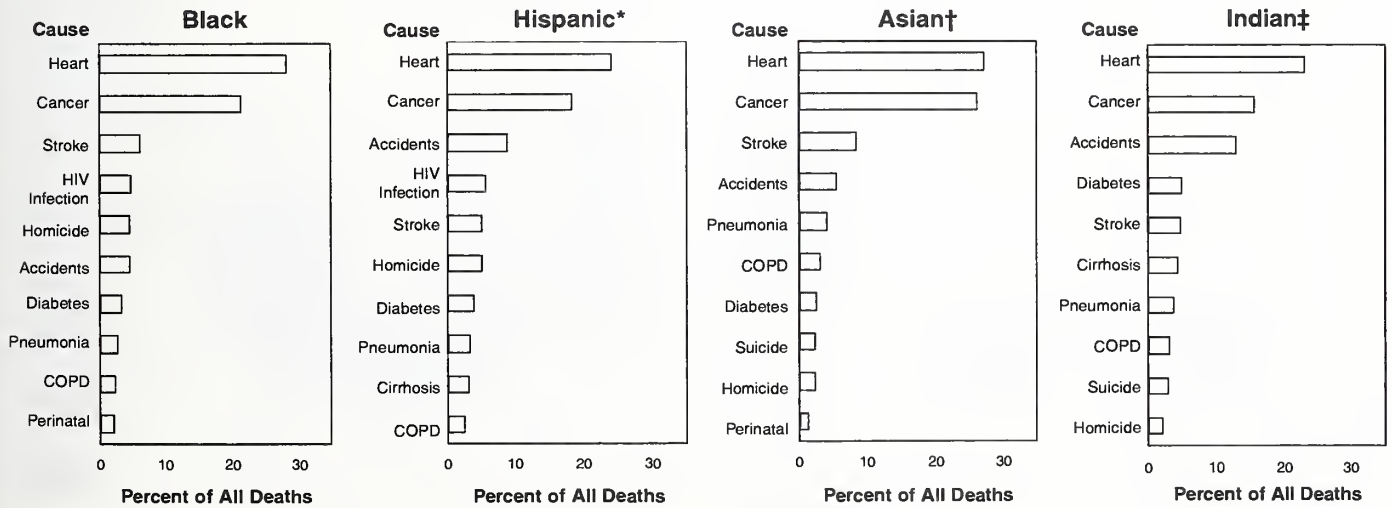
† COPD and allied conditions (including asthma).

‡ Based on the average remaining years of life up to age 75 years.

Note: Capitalization indicates diseases addressed in Institute programs.

Source: Vital statistics of the U.S., NCHS (provisional).

10 Leading Causes of Death Among Minority Groups, U.S., 1993



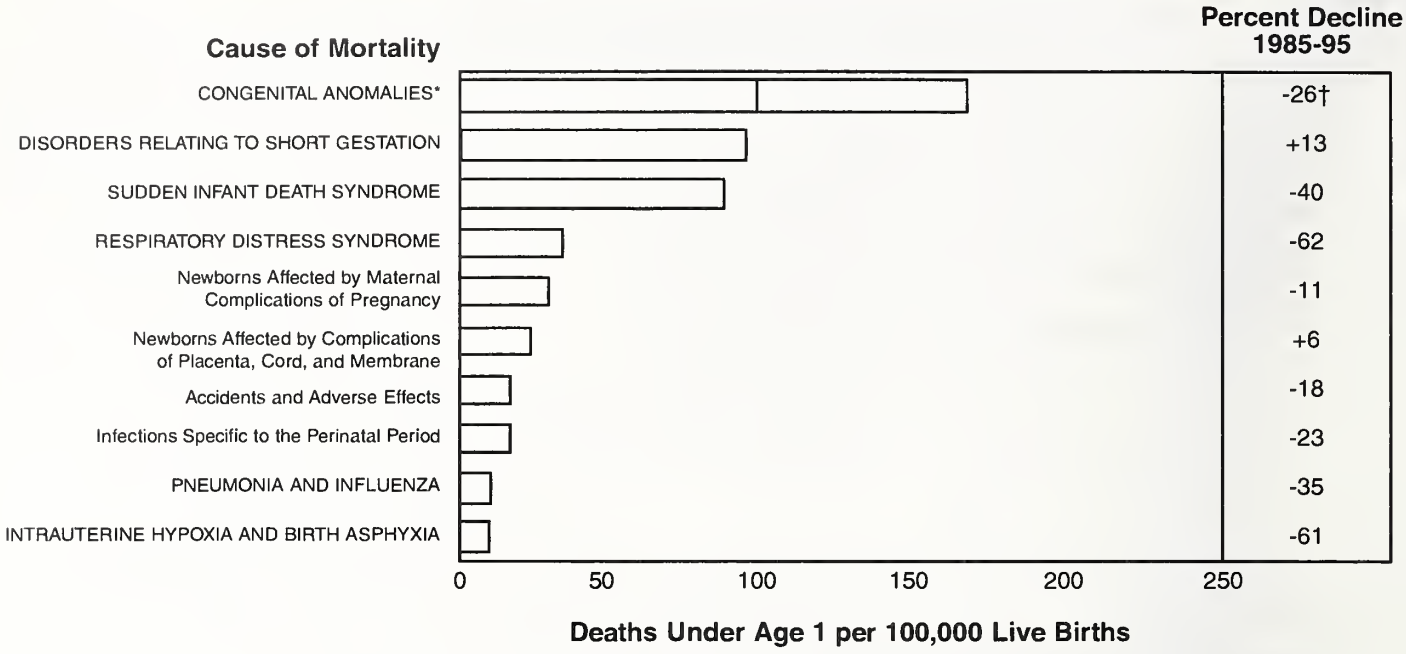
* Data for 49 reporting states and the District of Columbia.

† Includes deaths among individuals of Asian extraction and Asian-Pacific Islanders.

‡ Includes deaths among Aleuts and Eskimos.

Source: Vital statistics of the U.S., NCHS.

10 Leading Causes of Infant Mortality, U.S., 1995



* In 1993, congenital CVD and congenital anomalies of the respiratory system represented about 51 percent of all infant deaths due to congenital anomalies.

† Between 1982 and 1992, congenital CVD declined 32 percent; congenital anomalies of the respiratory system increased 17 percent; other congenital anomalies declined 27 percent.

Note: Capitalization indicates diseases addressed in Institute programs.

Source: From 1985 final and 1995 provisional vital statistics of the U.S., NCHS.

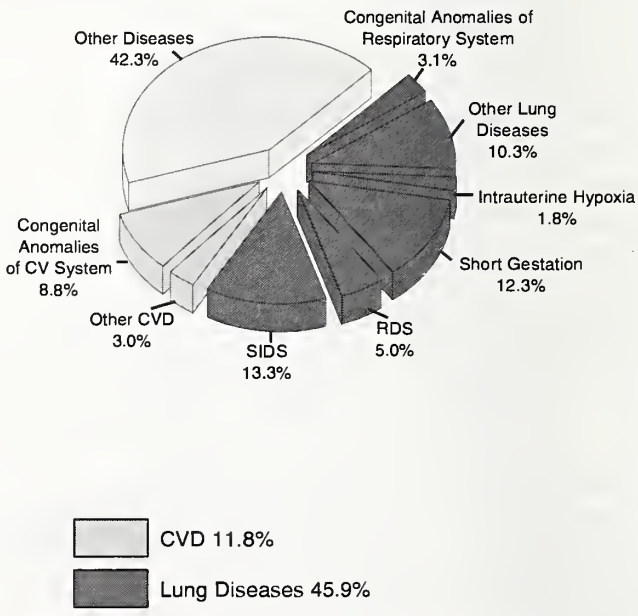
Deaths Under Age 1 Year Due to Cardiovascular and Lung Diseases, U.S., 1994

Cause of Death	Deaths Under Age 1
All Causes	31,400
Cardiovascular Diseases	3,720
Congenital Anomalies	2,776*
Other	944*
Lung Diseases	14,398
Sudden Infant Death Syndrome (SIDS)	4,180
Respiratory Distress Syndrome (RDS)	1,570*
Short Gestation	3,870*
Intrauterine Hypoxia	550
Congenital Anomalies	988*
Other Lung Diseases	3,240†
Other Diseases	13,282

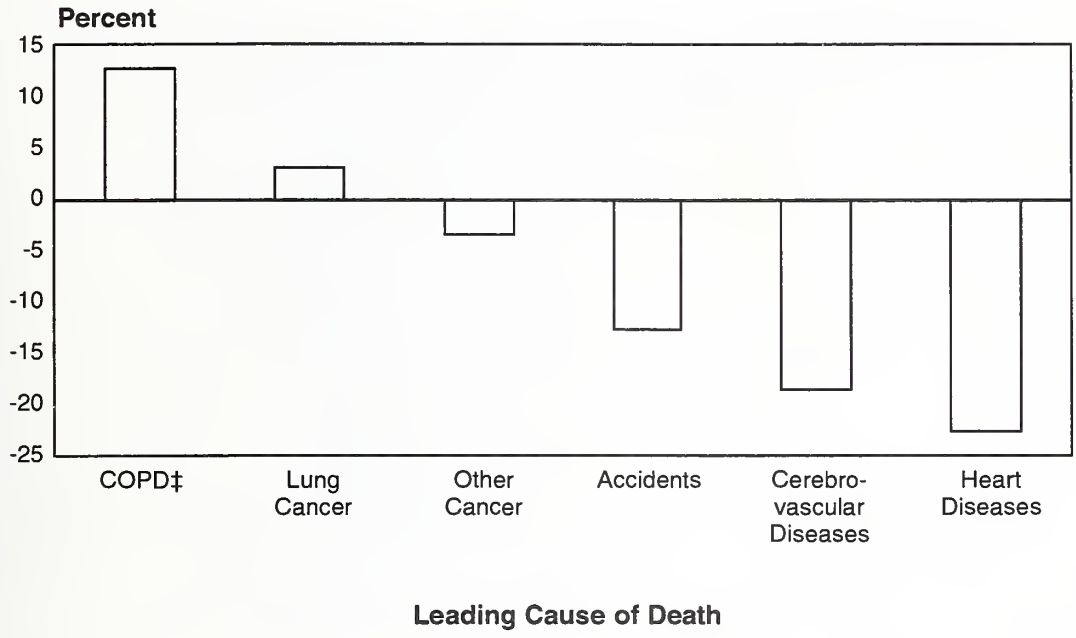
* NHLBI programs address these diseases.

† NHLBI programs address diseases that cause 1,122 of these deaths.

Source: Estimated by the NHLBI from final 1992 and provisional 1994 vital statistics of the U.S., NCHS.



Change in Death Rates* for Leading Causes of Death, U.S., 1985-95†



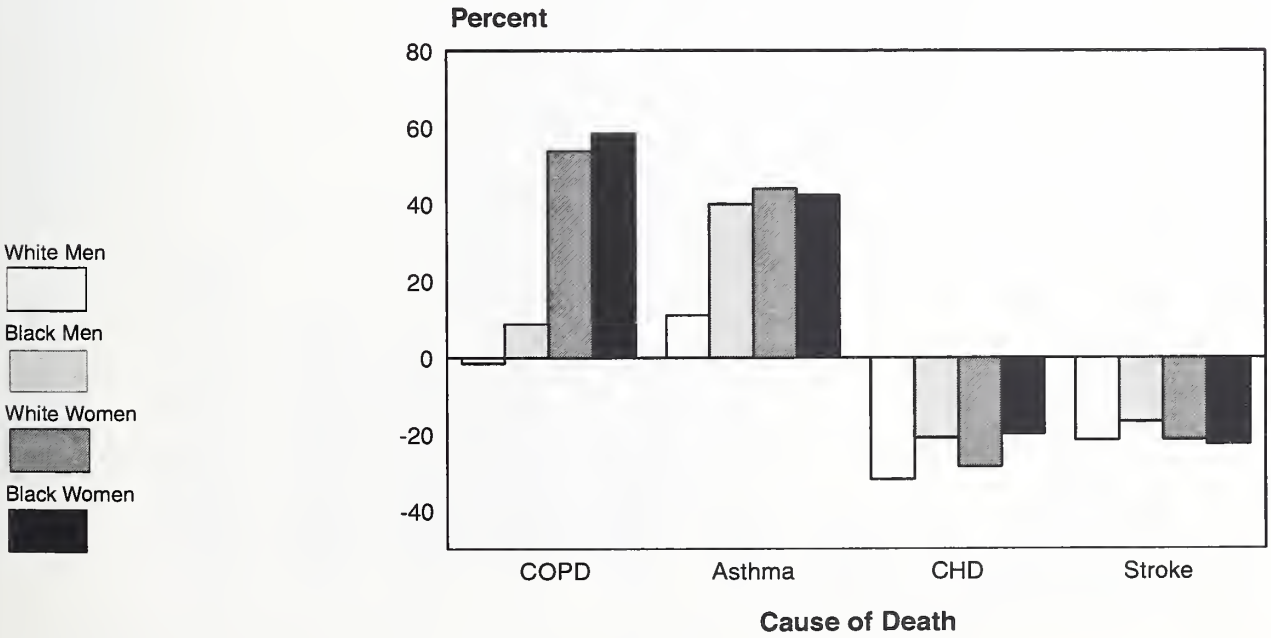
* Age adjusted to the 1940 U.S. population.

† Provisional for 1995.

‡ Includes asthma. COPD increased 12 percent, and asthma increased 23 percent.

Source: Vital statistics of the U.S., NCHS.

Change in Death Rates* for Selected Causes by Race and Gender, 1984-94

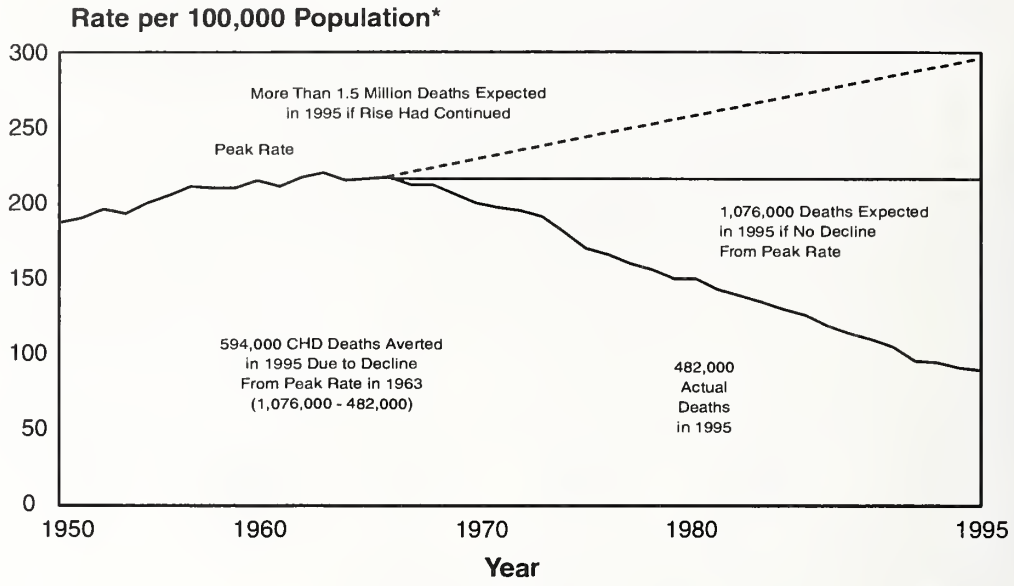


* Age adjusted to the 1940 U.S. population.

Source: Vital statistics of the U.S., NCHS.

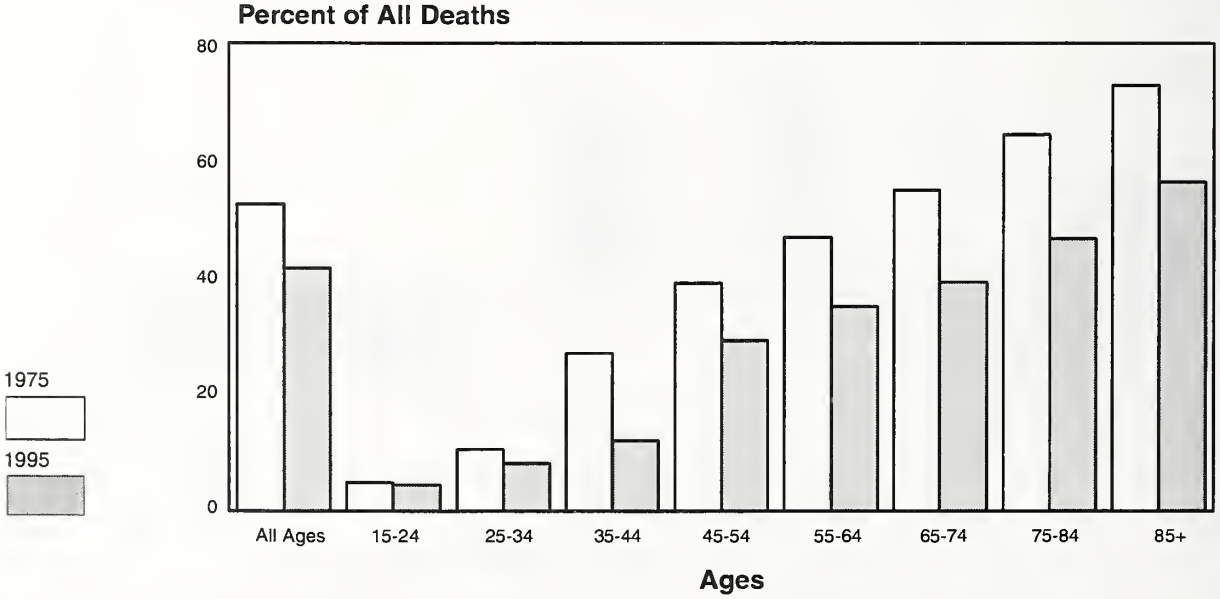
Death Rates for Coronary Heart Disease, U.S., 1950-95

Actual Rate and Expected Rates if Rise Had Continued or Reached a Plateau



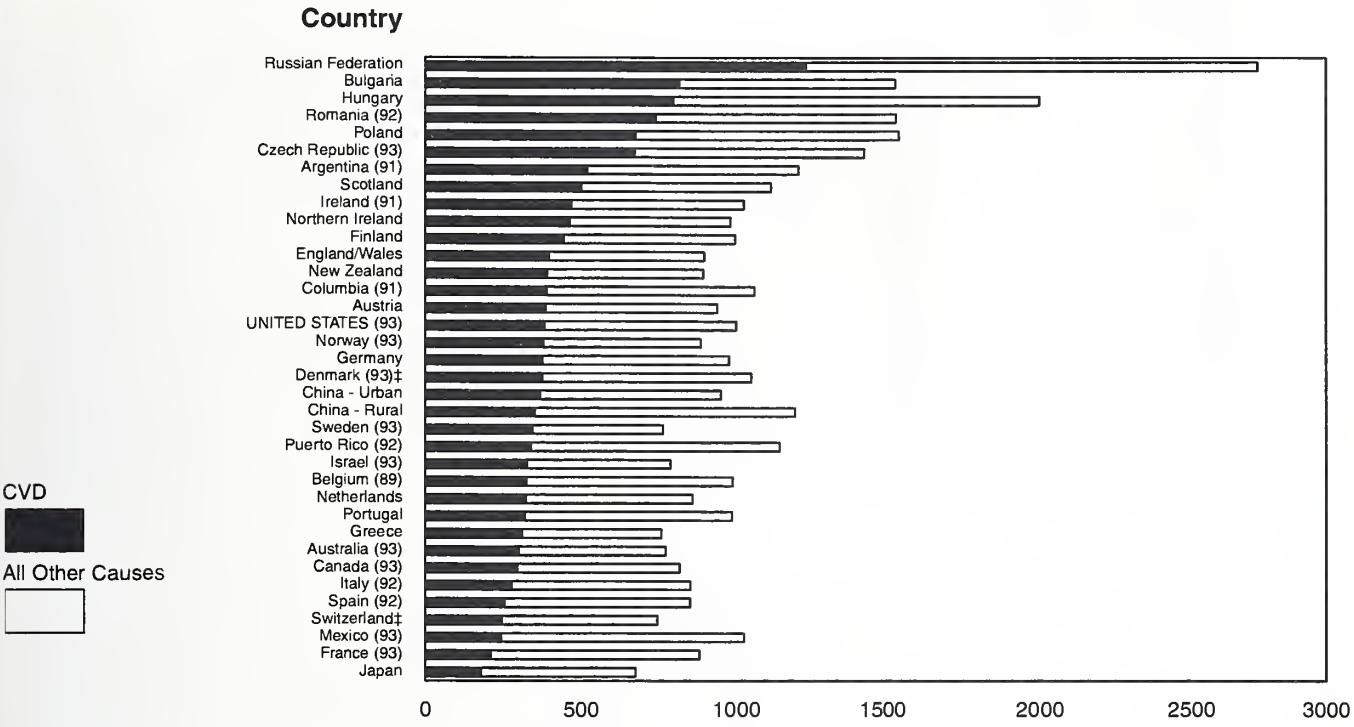
* Age adjusted to 1940 U.S. population. (Comparability ratio applied to 1968-78 rates.)
Source: Vital statistics of the U.S., NCHS. Figures for 1995 are provisional.

Deaths Due to Cardiovascular Diseases by Age, U.S., 1975 and 1995

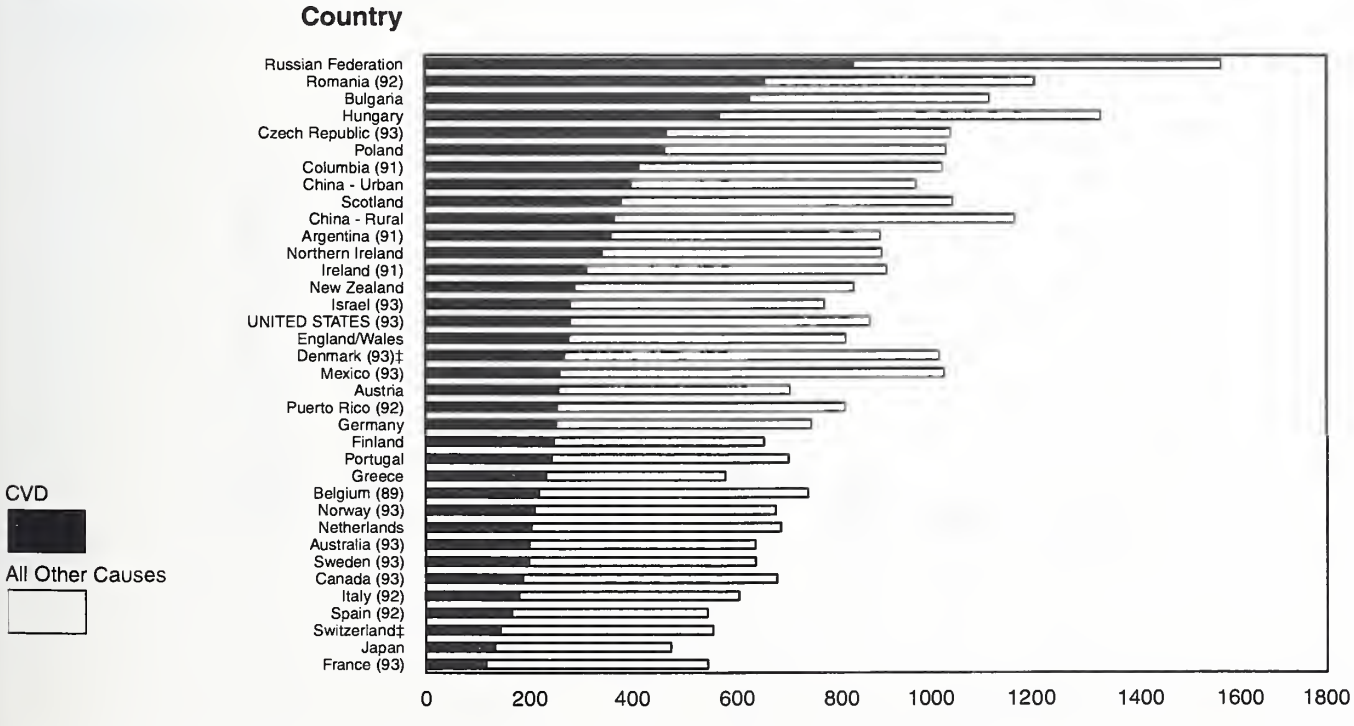


Source: Vital statistics of the U.S., NCHS. Data for 1995 are estimated by the NHLBI.

Death Rates for All Causes and Cardiovascular Diseases* in Men Ages 35-74 Years, Selected Countries, 1994†



Death Rates for All Causes and Cardiovascular Diseases* in Women Ages 35-74 Years, Selected Countries, 1994†



* ICD/9 390-459 for CVD except as noted. Rates are age adjusted to the European standard population.

† Years may vary as indicated.

‡ ICD/8 390-458 for CVD.

Source: World Health Organization (WHO).

Death Rates for Cardiovascular and Noncardiovascular Diseases, U.S., 1975 and 1995

Rates of Decline and Contributions to the Total Decline by Cardiovascular Diseases and Noncardiovascular Diseases

Cause of Death	Rate* 1975	Rate* 1995†	Rate Decline	Percent Decline	Percent Contribution to Total Decline
All Causes	630	503	127	20	100
Cardiovascular Diseases	293	176	118	40	92
Coronary Heart Disease	170	90	80	47	63
Stroke	54	27	27	50	21
Other	70	59	10	15	8
Noncardiovascular Diseases	337	327	10	3	8

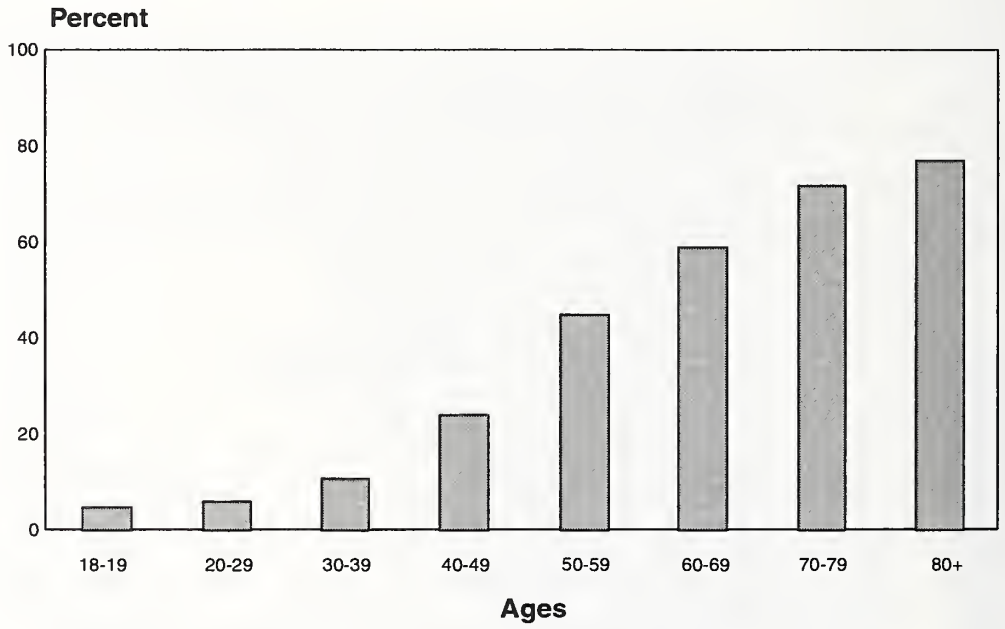
* Age-adjusted rate per 100,000 population.

† Data for 1995 are provisional or estimated by the NHLBI.

Note: Numbers may not add to totals due to rounding.

Source: Vital statistics of the U.S., NCHS.

Prevalence of Cardiovascular Disease* in Adults by Age; U.S., 1988-91



* Hypertension, coronary heart disease, cerebrovascular disease, congestive heart failure, and/or rheumatic heart disease. Hypertension = 140/90+ or on medication.

Source: National Health and Nutrition Examination Survey, 1988-91.

Estimated Prevalence of Common Cardiovascular, Lung, and Blood Diseases, U.S., 1994

Disease	Number
Total cardiovascular diseases	57,490,000
Hypertension*	50,000,00
Coronary heart disease	13,670,000
Atrial fibrillation	2,500,000
Congestive heart failure	4,780,000
Rheumatic heart disease	1,380,000
Cerebrovascular diseases	3,890,000
Hardening of arteries	2,239,000
Congenital heart disease	960,000
Asthma	14,562,000
Chronic bronchitis	14,021,000
Emphysema	2,028,000
Anemias† (all forms)	4,664,000

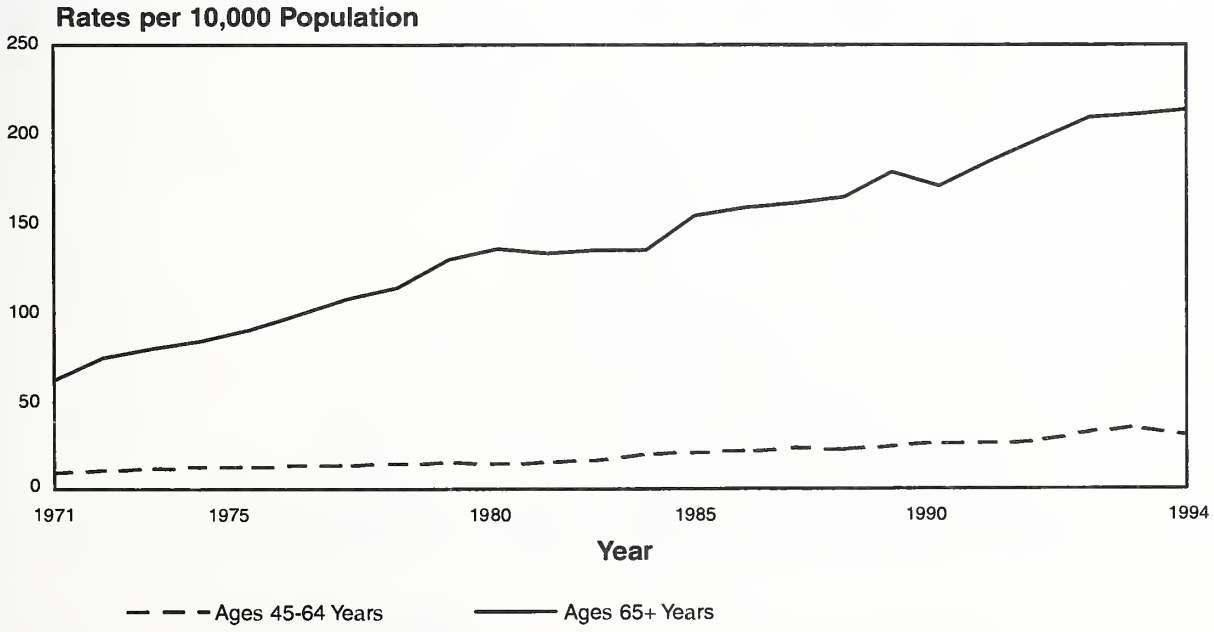
* Systolic blood pressure 160 mm Hg or greater and/or diastolic 90 or greater or on antihypertensive medication.

† Persons with more than one form of anemia are counted more than once.

Note: Some persons are included in more than one diagnostic group.

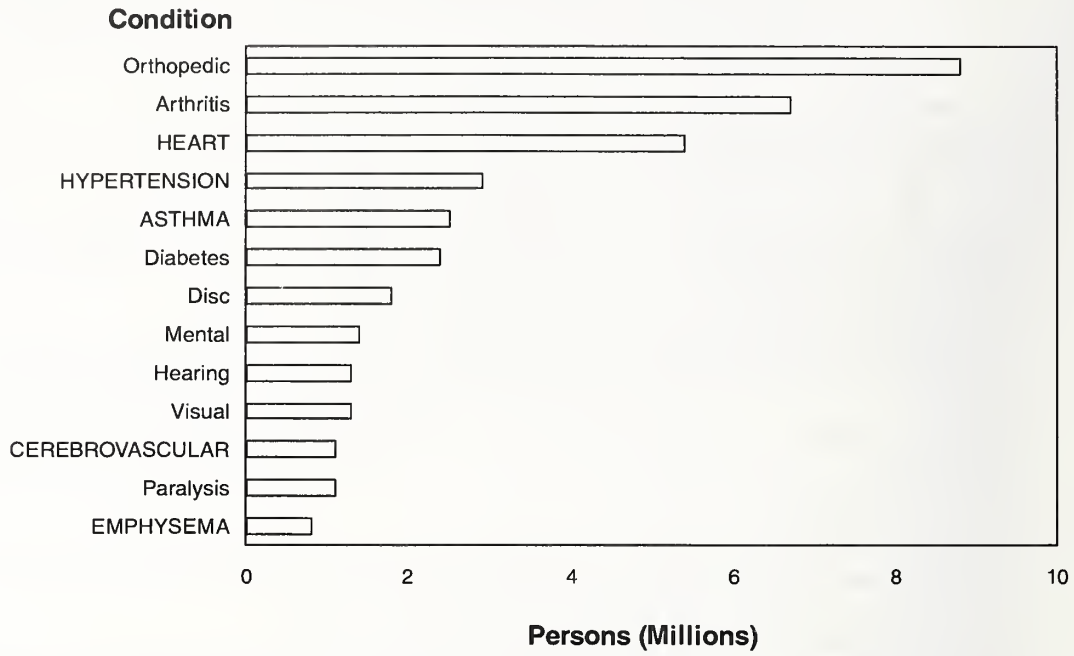
Sources: Extrapolated to United States 1994 from National Health and Nutrition Examination Survey, 1988-91, and National Health Interview Survey, 1994.

Hospitalization Rates for Congestive Heart Failure, Ages 45-64 Years and 65+ Years, U.S., 1971-94



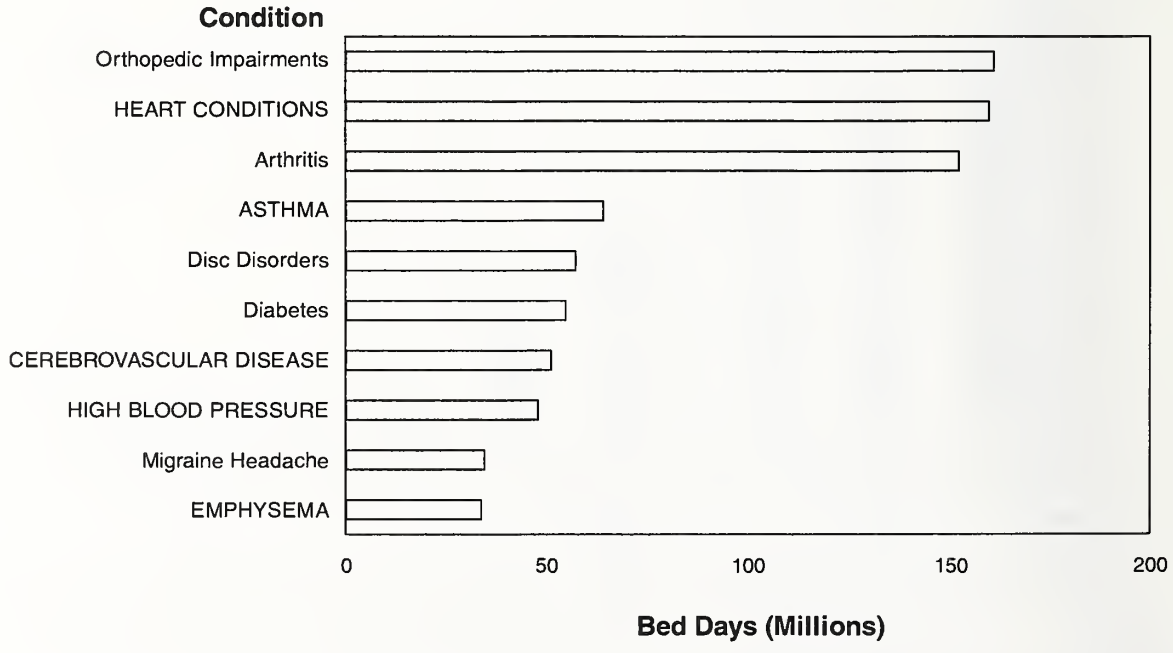
Source: National Hospital Discharge Survey, NCHS.

Prevalence of Leading Chronic Conditions Causing Limitation of Activity, U.S., 1990-92



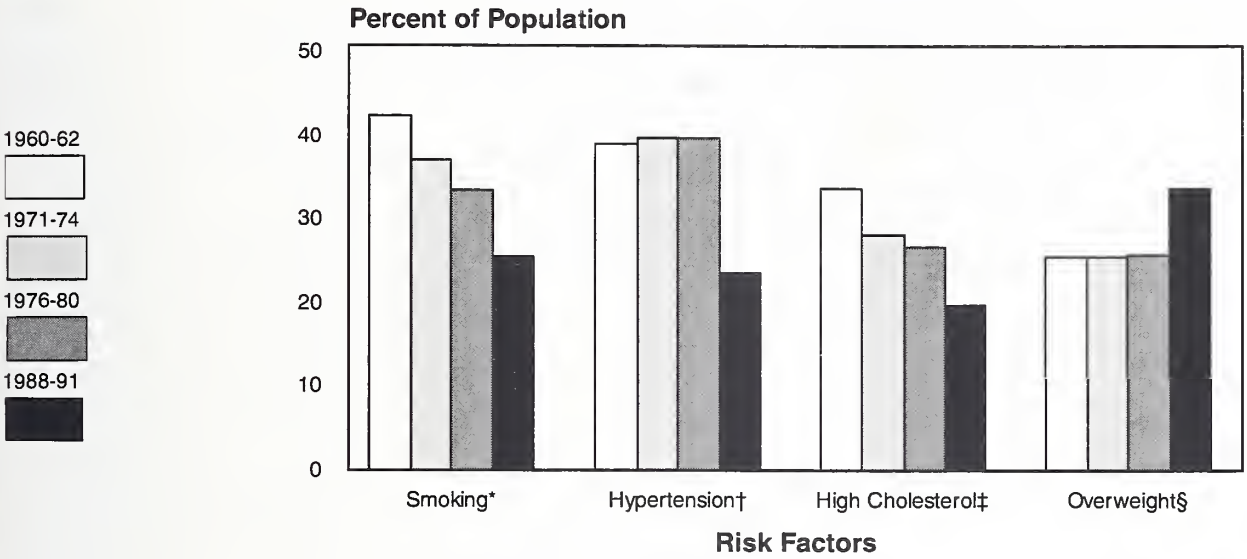
Note: Capitalization indicates diseases addressed in Institute programs.
Source: National Health Interview Survey (NHIS), NCHS.

Leading Chronic Conditions Causing Bed Disability, U.S., 1990-92



Note: Capitalization indicates diseases addressed in Institute programs.
Source: NHIS, NCHS.

Trends in Prevalence of Risk Factors, U.S., 1960-94



* The years associated with the smoking data are:
1965, 1974, 1979, 1994.

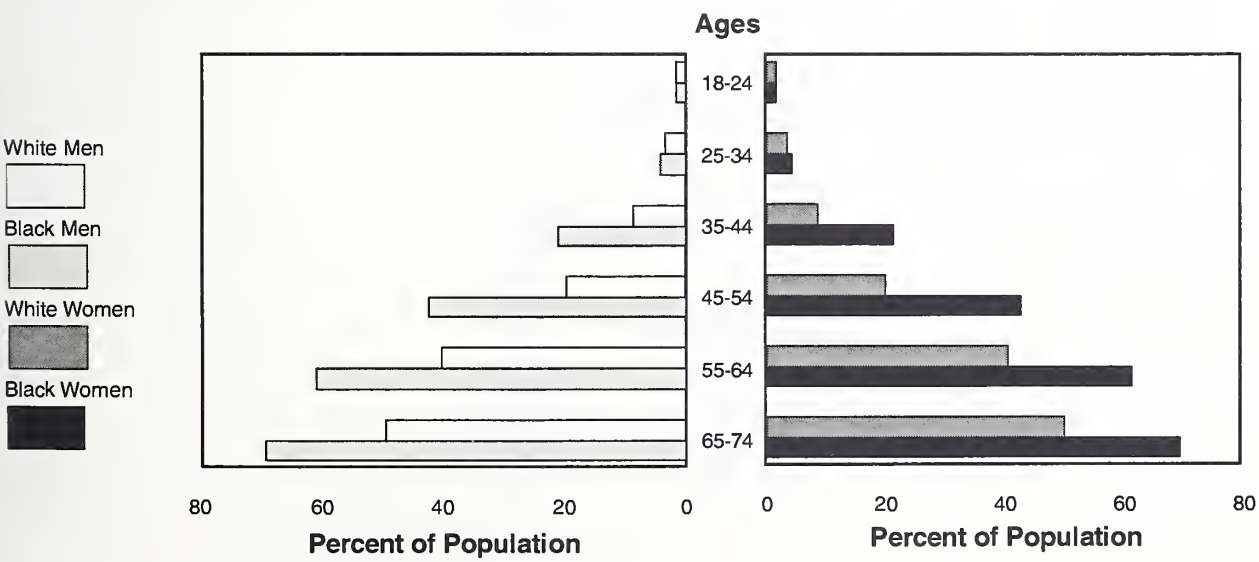
† Blood pressure 140/90+ or on medication.

‡ Total serum cholesterol +240 mg/dL.

§ BMI 27.8+ kg/m^2 for men and 27.3+ for women.

Source: For smoking: NHIS, NCHS. For hypertension, high cholesterol, and overweight: NHANES, NCHS.

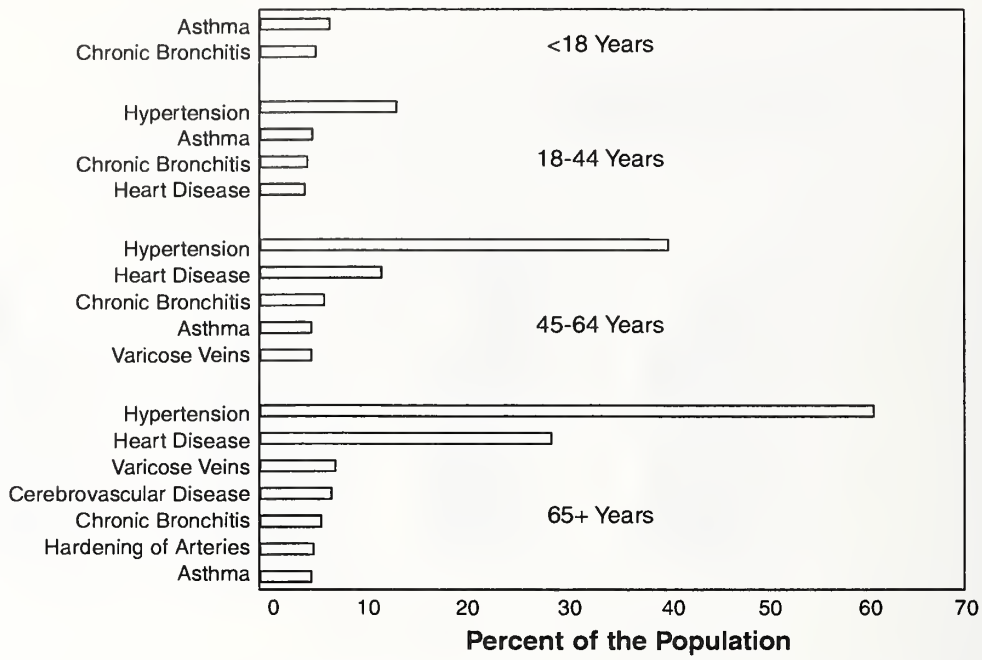
Adult Population With Hypertension,* by Age, Gender, and Race, U.S., 1988-91



* Systolic blood pressure 140+ or diastolic 90+ or taking antihypertensive medication.

Source: NCHS, personal communication.

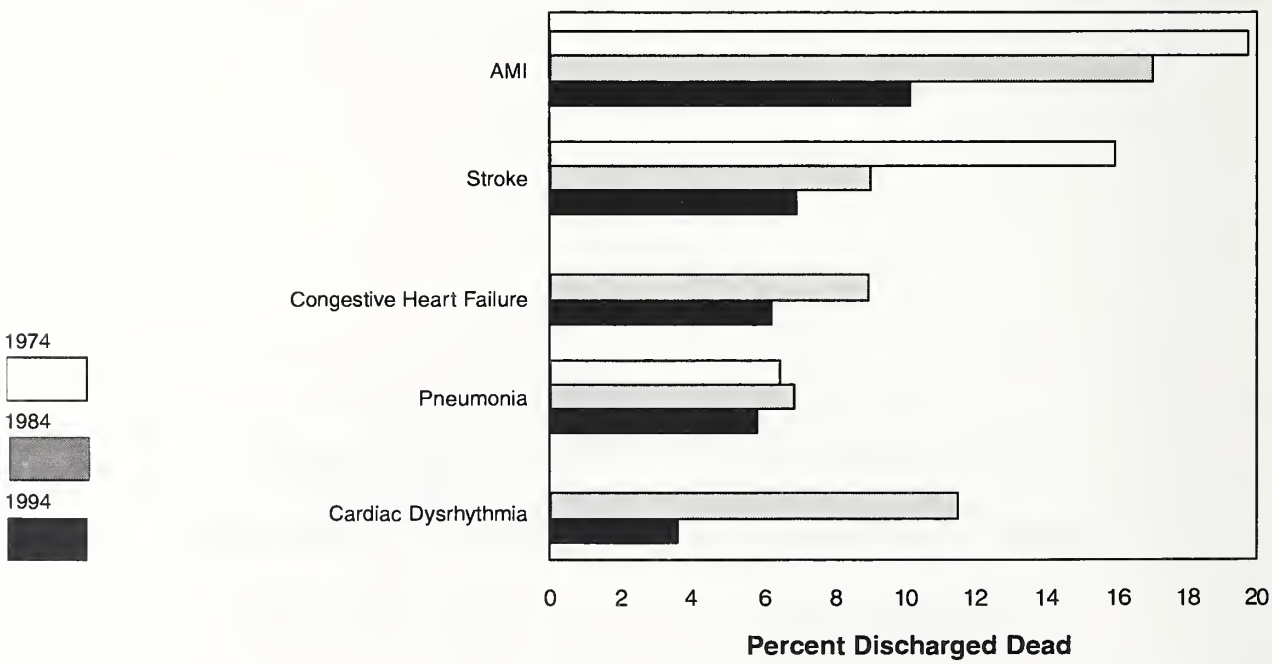
Prevalence of Common Cardiovascular and Lung Diseases by Age, U.S., 1994



Note: Each estimate for heart disease refers to the number of persons with one or more forms: coronary, arrhythmic, other. Numbers depicted in bars are not additive by disease because some persons have more than one disease.

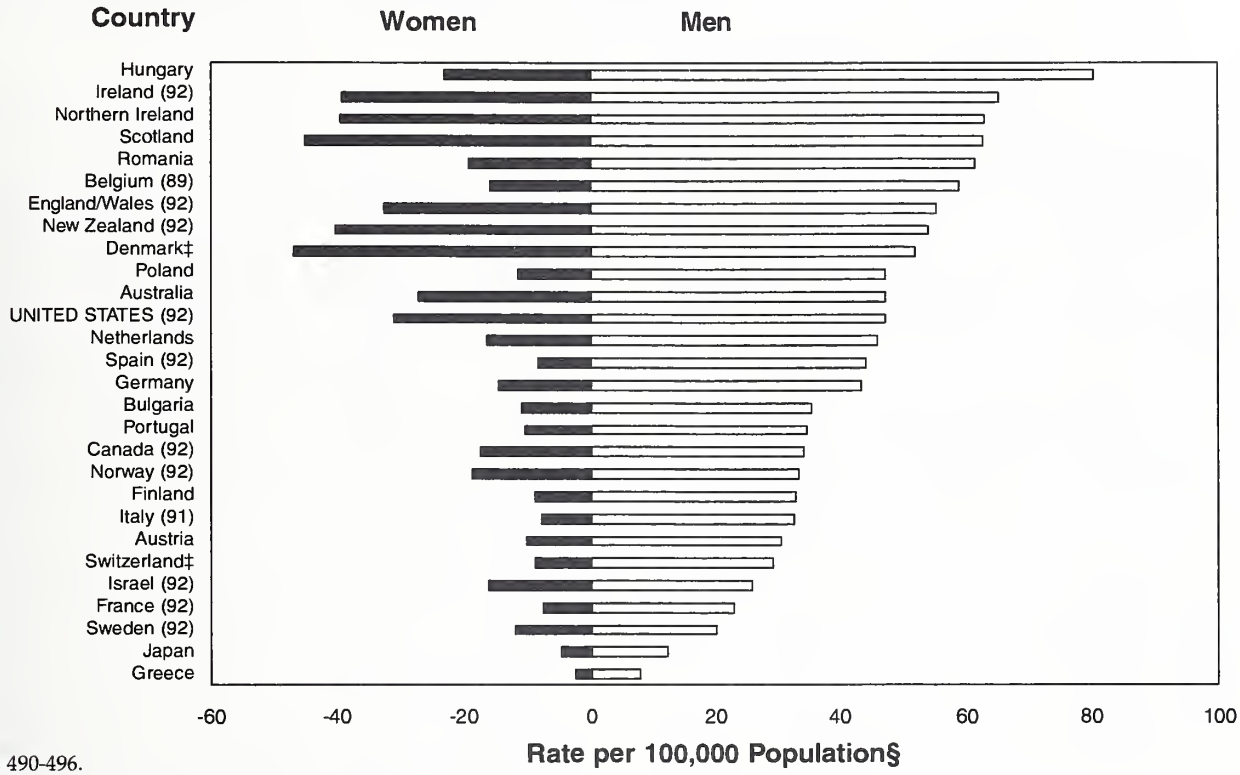
Source: NHIS and, for hypertension, National Health and Nutrition Examination Survey, NCHS.

Common Cardiovascular and Lung Diseases With High Percentage Discharged Dead From Hospitals, U.S., 1974, 1984, 1994



Source: National Hospital Discharge Survey, NCHS.

Death Rates for Chronic Obstructive Pulmonary Disease and Allied Conditions* by Gender, Ages 35-74 Years, Selected Countries, 1993†



* ICD/9 codes 490-496.

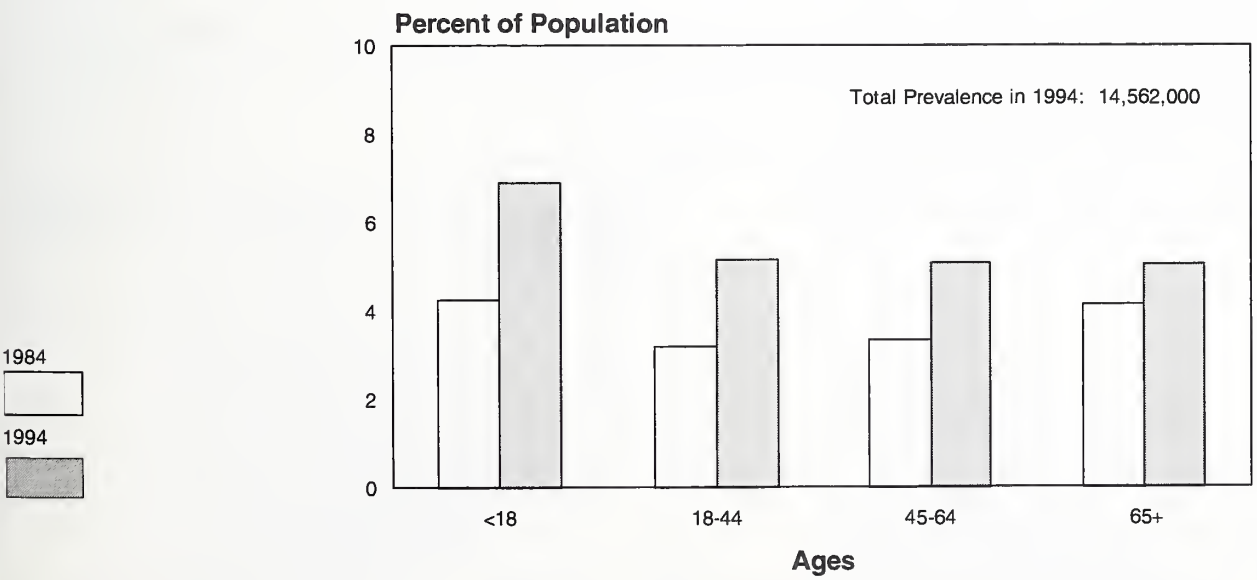
† Years may vary as indicated.

‡ ICD/8 codes 490-493.

§ Rates are age adjusted to the European standard population.

Source: Published and unpublished data from WHO.

Prevalence of Asthma by Age, U.S., 1984 and 1994



Source: NHIS, NCHS.

Direct and Indirect Economic Costs of Illness by Major Diagnosis, U.S., 1997

	Amount (Dollars in Billions)				Percent Distribution			
		Indirect Costs				Indirect Costs		
	Direct Costs*	Morbidity†	Mortality‡	Total	Direct Costs	Morbidity	Mortality	Total
Cardiovascular Disease§	$158.5	$24.6	$76.0	$259.1	14.8	15.7	23.6	16.7
(Including Blood Clotting)**	(37.2)	(5.8)	(21.3)	(64.3)	(3.5)	(3.7)	(6.6)	(4.1)
Lung Diseases††	78.3	20.4	16.0	114.7	7.3	13.0	5.0	7.4
Blood Diseases	7.6	0.6	1.5	9.6	0.7	0.4	0.5	0.6
Subtotal	244.4	45.6	93.5	383.4	22.8	29.1	29.0	24.7
Diseases of the Digestive System	111.8	8.0	13.1	132.9	10.4	5.1	4.1	8.6
Neoplasms	51.3	13.4	71.5	136.2	4.8	8.6	22.2	8.8
Mental Disorders	84.0	20.6	4.2	108.8	7.8	13.2	1.3	7.0
Diseases of the Nervous System	58.4	6.1	5.4	69.9	5.4	3.9	1.7	4.5
Diseases of the Musculoskeletal System	56.2	15.9	1.1	73.2	5.2	10.2	0.3	4.7
Diseases of the Genitourinary System	44.6	4.0	2.9	51.5	4.2	2.6	0.9	3.3
Endocrine, Nutritional, and Metabolic Diseases	39.5	5.1	9.0	53.6	3.7	3.2	2.8	3.4
Infectious and Parasitic Diseases	28.9	9.6	30.8	69.3	2.7	6.1	9.5	4.5
Diseases of the Skin	43.8	1.2	0.2	45.2	4.1	0.8	0.1	2.9
Other Respiratory Diseases	45.5	6.2	2.1	53.8	4.2	4.0	0.6	3.5
Other and Unallocable	263.9	20.9	88.8	373.6	24.6	13.3	27.5	24.1
Total	**$1,072.3**	**$156.6**	**$322.6**	**$1,551.5**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

* Direct costs of CVD were estimated by NCHS. Direct costs are personal health care expenditures for hospital and nursing home care, drugs, home care, and physician and other professional services. Totals for these types of costs are estimated by the Health Care Financing Administration (HCFA). Allocation by diagnosis is based on statistics from the National Hospital Discharge Survey, the National Ambulatory Medical Care Survey, National Home and Hospice Survey, and the National Nursing Home Survey of the NCHS.

† Morbidity costs were estimated for 1997 by multiplying 1980 NCHS estimates by a 5 percent per year inflation factor.

‡ Mortality estimates are obtained by multiplying deaths in 1993 for these causes by the 1992 present value of lifetime earnings discounted at 6 percent times the 1992-97 inflation factor (assumed to be 5 percent per year).

§ Includes congenital cardiovascular disease.

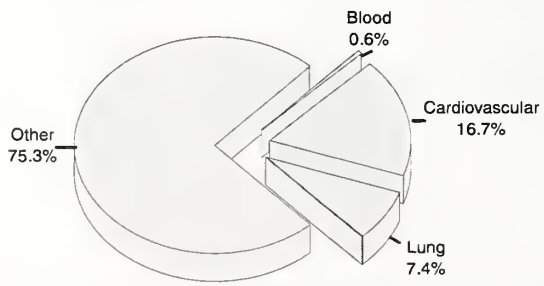
** Based on NHLBI definition of blood-clotting diseases based primarily on proportions of morbidity and mortality statistics for acute myocardial infarction, cerebrovascular diseases, and diseases of arteries.

†† Does not include lung cancer, leukemias, or pulmonary heart disease.

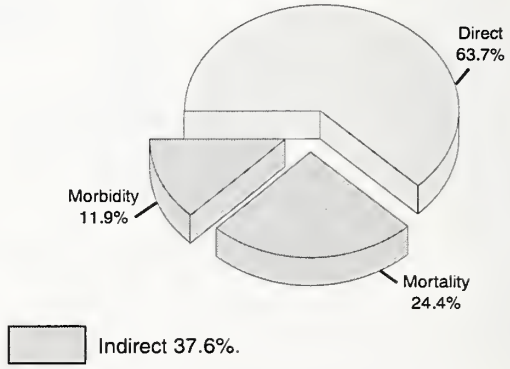
Note: Numbers may not add to total due to rounding.

Source: Estimates by the NHLBI; data from the NCHS, HCFA, and the Bureau of the Census.

Total Economic Costs, U.S., 1997



Economic Costs: Cardiovascular, Lung, and Blood Diseases, U.S., 1997



5. Institute-Initiated Programs Starting in FY 1996

Approximately three-quarters of the research supported by the National Heart, Lung, and Blood Institute is initiated by individual investigators; the remainder is initiated by the Institute. This chapter describes the rationale for Institute-initiated programs and the objectives of these programs that began in FY 1996.

It is incumbent upon the Institute to respond appropriately to evolving national needs, congressional mandates, and advances in scientific knowledge. Each NHLBI initiative represents the outcome of numerous and extensive discussions and thorough reviews by representatives of the scientific community and by Institute advisory committees and special emphasis panels. The advisory committees and special emphasis panels, together with professional societies and NHLBI staff, continually review the progress of research within the NHLBI program areas, assess newly acquired knowledge, and identify research topics that show the best opportunities or have the greatest needs. This planning process contributes to policy development at the national level through the setting of priorities among competing programs and establishment of budgets for individual programs and projects.

Initiatives generally evolve as Requests for Applications (RFAs) for grants or for cooperative agreements, or Requests for Proposals (RFPs) for contracts. A smaller number of initiatives take the form of Program Announcements (PAs). Applications and proposals submitted in response to RFAs and RFPs compete among themselves for specific "set-aside" funds. Applications submitted in response to PAs compete with other investigator-initiated applications for funding.

RFA, RFP, and PA concepts that are acceptable to the NHLBI Director are presented to the National Heart, Lung, and Blood Advisory Council (NHLBAC) for review, comments, and concurrence.

Initiatives that receive the concurrence of the NHLBAC are considered further by the NHLBI Director in the context of the Institute's budget, program priorities, and review workloads, and the proposed mechanism. These considerations guide the Director's subsequent decision to approve or not to approve an initiative for release. Released initiatives are announced in the weekly publication the *NIH Guide to Grants and Contracts*.

Applications and proposals submitted in response to RFAs and RFPs are reviewed by the NHLBI. Applications submitted in response to PAs are reviewed by the NIH Division of Research Grants.

Descriptions of the 27 Institute-initiated programs beginning in FY 1996 are presented on the following pages according to the NHLBI scientific program.

HEART AND VASCULAR DISEASES PROGRAM

Renewals

Etiology of Excess Cardiovascular Disease (CVD) in Diabetes Mellitus

The objective of this RFA, cofunded with the Juvenile Diabetes Foundation International, is to understand how the presence of diabetes increases the risk of CVD from both basic and clinical research perspectives. A coordinated effort to evaluate the metabolic and environmental factors responsible for the pathogenesis of CVD in existing, defined population groups is required. The mechanism employed by this RFA, the program project grant (P01), is for the support of broadly based, multidisciplinary or multifaceted research programs. This is a reissue of an RFA originally published in October 1994.

Strong Heart Study: Cardiovascular Disease in American Indians—Phase III

The objective of this RFA is to continue the large, multicenter, standardized survey of CVD and CVD risk in American Indians begun in 1988 by the NHLBI. In Phase III, atherosclerosis assessed by ultrasonography will be evaluated in

relation to cardiac structure and function, renal dysfunction, and traditional CVD risk factors. In addition, the study will examine clinical CVD in three groups of American Indians with differences in the prevalence of clinical CVD, level of CVD risk factors, genetic heritage, and environmental conditions. The feasibility of genetic and family studies will also be explored.

New Initiatives

Angiogenesis and Vascular Remodeling in the Microvasculature

The objective of this RFA is to encourage research on the molecular, cellular, and physiological mechanisms involved in the processes of angiogenesis and remodeling in the microvasculature, particularly as they relate to such pathological states as coronary insufficiency and hypertension.

Angiographic Trial in Women

The objectives of this RFP are to assess whether hormonal replacement therapy or antioxidant treatment will stabilize, inhibit progression, or induce regression of coronary plaques in women and to elucidate the mechanisms by which these treatments may modify atherosclerosis in women.

Prevention of Events with Angiotensin Converting Enzyme Inhibitor Therapy (PEACE)

The objective of this RFP is to determine whether the addition of an angiotensin-converting enzyme inhibitor to standard therapy in patients with known coronary artery disease and preserved left ventricular function will prevent CVD mortality and reduce the risk of experiencing a myocardial infarction. The study will enroll men and women ages 50 years or older with documented coronary artery disease and a left ventricular ejection fraction of greater than 40 percent.

Research on Atherosclerotic Lesions Using Human Tissues Collected in the PDAY and RFEHA Programs

The objective of this PA is to encourage utilization of human tissues collected in the PDAY (Pathobiological Determinants of Atherosclerosis in Youth) and RFEHA (Risk Factors in Early Human Atherogenesis) programs. These specimens are suitable for investigation of cellular and molecular factors that may be implicated in the initiation and progression of atherosclerotic lesions in humans between 15 and 34 years of age.

Specialized Centers of Research (SCORs) on the Molecular Genetics of Hypertension

The objective of this RFA is to establish a collaborative network of closely interacting, multiproject research centers to study the molecular genetics of hypertension. It is expected that animal and human studies will be coordinated both within single centers and among the centers constituting the network. The centers will identify and map the genes responsible for hypertension in humans and animals and undertake mechanistic studies to clarify the role of specific genetic mutations in the development and maintenance of high blood pressure.

Transition From Cardiac Hypertrophy to Overt Heart Failure

The objective of this PA is to improve prevention and treatment of heart failure through research on how the compensated, hypertrophied heart progresses to failure. A molecular and cellular approach is encouraged to elucidate the signaling mechanisms that coordinate the events leading to the deterioration of cardiac structure and function. Suggested areas for investigation include mechanisms of action of mediators derived from myocardial, interstitial, endothelial, endocrine, or immune cells and the respective receptors for those mediators as well as the factors that affect altered gene expression of these mediators and their receptors.

Women's Ischemia Syndrome Evaluation (WISE)

The objective of this RFP is to improve the diagnostic reliability of cardiovascular testing in evaluating ischemic heart disease in women. Secondary objectives are to develop safe, efficient, and cost-effective diagnostic approaches for evaluating women with suspected ischemic heart disease; to determine the frequency of myocardial ischemia in the absence of significant epicardial coronary stenosis; and to ascertain the frequency of nonischemic or noncardiac chest pain.

LUNG DISEASES PROGRAM

Renewal

Tuberculosis Academic Award

The objective of this RFA, the fourth in a series, is to stimulate the development and/or improvement of the quality of medical school curricula; physician, patient, and community education; and clinical practice related to the recognition, prevention, and management of mycobacterial tuberculosis (TB) in the United States.

New Initiatives

Cellular and Molecular Mechanisms of Lymphangioleiomyomatosis (LAM)

The objective of this PA, cosponsored by the NIH Office of Rare Disease Research and the NIH Office of Research on Women's Health, is to stimulate basic research on the development and progression of pulmonary LAM using cellular and molecular approaches to explore the etiology and pathogenesis of the disease.

Pathogenesis and Treatment of Cystic Fibrosis (CF)

The objective of this RFA, cofunded with the NIDDK and the Cystic Fibrosis Foundation, is to develop new therapies for CF through support of basic research on the pathogenesis of CF and its complications. These therapies should result from applying advances in cell and molecular biology to CF, translating this basic research into new treatments, and conducting clinical research with potential therapies.

Regulation of Human Immunodeficiency Virus (HIV) Activation in the Lung

The objective of this RFA is to stimulate research into the mechanisms that lead to activation of HIV-1 in the lung and mechanisms by which cofactors may lead to increased HIV-associated pulmonary disease. Cofactors include viral infections, cytokines, and environmental factors such as cigarette smoke.

BLOOD DISEASES AND RESOURCES PROGRAM

Renewal

Viral Nucleic Acid Testing for HIV and Hepatitis C (HCV) in Donated Organs and Blood

The first objective of this RFP, cofunded with the Food and Drug Administration (FDA), is to refine, for use in clinical laboratories, one or more nucleic acid-based techniques for the direct detection of blood-borne viruses (HIV and HCV are the highest priorities) in donors of blood for transfusion and organs for transplantation. The purpose of these new techniques is to reduce the antibody-negative window between infectivity and detection to the shortest possible time and, when possible, to obviate the need for indirect antibody tests. The second objective is to file for investigational new drug exemptions (INDs) with the FDA and submit and obtain approval for product license applications (PLAs) for these new tests.

New Initiatives

Adult Hydroxyurea Patient Follow-Up Study

The objective of this RFP is to establish a follow-up of the adult patients who participated in the Multicenter Study of Hydroxyurea in Sickle Cell Disease to ascertain the long-term effects, if any, of hydroxyurea usage in this patient population.

Cord Blood Stem Cell Transplantation Study

The objective of this RFP is to evaluate human umbilical cord blood as an alternative to bone marrow as a source of hematopoietic stem cells capable of reconstituting the bone marrow of recipients with a variety of genetic and hematologic diseases. The study will determine whether cord blood stem and progenitor cell transplantation, from neonate donors unrelated to recipients, results in acceptable engraftment, easily manageable graft-vs-host disease, and satisfactory disease-free survival. Two to four centers will collect, process, cryopreserve, and distribute human umbilical cord blood for unrelated marrow reconstitution. Six to eight transplant centers will follow common protocols for the transplantation of cord stem and progenitor cells. A coordinating center will manage donor searches and facilitate the distribution of cord blood units for transplants as well as collect and analyze data from these transplants.

Sickle Cell Disease Therapy

The objective of this RFA, cosponsored by the NIH Office of Research on Minority Health, is to stimulate research leading to the development of therapeutic approaches for the treatment of sickle cell disease. Proposals are expected to

build on the significant recent advances in our understanding of the pathophysiology, genetic characteristics, molecular and cellular biology, natural history, and clinical aspects of the sickling disorders. The initiative is intended to support laboratory testing of defined potential therapeutic approaches rather than clinical trials.

Specialized Centers of Research (SCORs) in Hemostatic and Thrombotic Diseases

The objective of this RFA is to support basic research, stimulate clinical studies, and facilitate transfer of basic knowledge to the bedside in hemostatic and thrombotic diseases. Examples of possible research include the following: polygenic analysis of thrombotic disorders; influence of nutrition and environment on thrombotic disease; regulation of megakaryocytopoiesis and platelet production; diagnosis, assays, and treatment for venous thrombosis; gene therapy for hemophilia; genetic regulation of fibrinolytic proteins; and molecular genetics of platelet surfaces and thrombocytopenias.

Specialized Centers of Research (SCORs) in Transfusion Biology and Medicine

The objectives of this RFA are to improve the safety and efficacy of transfused blood and blood components, to determine the indications for their use, and to evaluate and possibly modify immunological responsiveness following their administration. In addition, this initiative will develop and evaluate treatments that substitute for certain functions of blood components, or stimulate their endogenous production, so as to reduce transfusion needs. The initiative encourages the use of innovative technologies to pursue fundamental research studies in transfusion biology and clinical investigations in transfusion medicine. The overall goals of this program are to make optimal use of blood and blood components and to improve transfusion practice.

NATIONAL CENTER FOR SLEEP DISORDERS RESEARCH

New Initiative

Sleep Academic Award

The objective of this RFA is to develop and/or improve the quality of medical school curricula; physician, patient, and community education; and clinical practice for the prevention, management, and control of sleep disorders. A secondary objective is to promote high-quality clinical research in sleep. Three 5-year awards will be granted in each of the next 3 fiscal years.

INSTITUTE-WIDE INITIATIVES

Renewals

Mentored Research Scientist Development Award for Minority Faculty

The objectives of this RFA are to enhance the research skills of minority faculty members at domestic institutions and to increase the number of minority individuals involved in research endeavors in areas of interest to the NHLBI. The mechanism of support is the Research Scientist Development Award (K01).

Minority Institution Faculty-Mentored Research Scientist Development Award

The objectives of this RFA are to enhance the research skills of minority faculty members at minority domestic institutions and to increase the number of minority individuals involved in research endeavors in areas of interest to the NHLBI. The mechanism of support is the Research Scientist Development Award (K01).

Minority Institutional Research Training Program

The objective of this RFA is to offer research training grants to minority schools and institutions in cardiovascular, pulmonary, hematologic, and sleep research. These grants enable qualified graduate students, health professional students, and postdoctoral students to participate in research program areas of interest to the NHLBI. The mechanism of support is the Institutional National Research Service Award (T32).

Short-Term Research Training for Minority Students Program

The objective of this RFA is to encourage institutions to provide opportunities for underrepresented minority students at the undergraduate and graduate levels to become exposed to biomedical research in areas relevant to cardiovascular, pulmonary, hematologic, and

sleep research through a short-term research experience. The mechanism of support is the National Research Service Awards Short-Term Training Grant (T35).

New Initiatives

Biobehavioral Pain Research

The objective of this trans-NIH PA is to stimulate and foster a wide range of basic and clinical studies on pain in the context of the missions of the various Institutes at the NIH. Investigations into individual differences in pain responses, which may be due to factors such as genetics, endocrine activity, neural activity, immune function, psychological state, disability state, age, gender, and cultural background, are encouraged. Research is also needed on the neurophysiological mechanisms of pain. The announcement encourages research on the pain experience at all levels, including the gene, cell, organ, and individual, with the goal of developing biobehavioral interventions to manage or prevent pain.

HBCU Research Scientist Award

The objective of this RFA, cofunded with the NIH Office of Research on Minority Health, is to assist HBCUs (Historically Black Colleges and Universities) in strengthening and augmenting their human resources by helping them to recruit established research scientists. In addition, this program will help enhance the career of the recruited research scientist and strengthen other HBCU resources for the conduct of biomedical and behavioral research in areas related to cardiovascular, lung, and blood health and disease, transfusion medicine, and sleep disorders.

Human Brain Project: Phase I Feasibility Studies

The objective of this trans-NIH PA is to encourage and support investigator-initiated neuroinformatics research that will lead to new digital tools for all domains of brain and behavioral research. Approaches and technologies studied under the projects will be generalizable, scalable, and extensible and will use sophisticated, powerful computational resources. The mechanisms of support are the Research Project Grant (R01) and the Exploratory Center Grant (P20).

6. Institute Public Advisory Committees

National Heart, Lung, and Blood Advisory Council

Structure

Chair: Claude Lenfant, M.D., Director, National Heart, Lung, and Blood Institute

Executive Secretary: Ronald G. Geller, Ph.D., Director, Division of Extramural Affairs, National Heart, Lung, and Blood Institute

The Secretary of Health and Human Services (HHS) appoints 18 members: 12 members are leading representatives of the health and scientific disciplines (including public health and the behavioral or social sciences), and 6 are from the general public and are leaders in the fields of public policy, law, health policy, economics, and management.

Members are appointed for overlapping terms of 4 years.

The Council includes the following ex officio members:

- Secretary, HHS
- Director, NIH
- Director, NHLBI
- Chief Medical Director, or Designee, Veterans Affairs
- Assistant Secretary of Defense for Health Affairs, or Designee.

Functions

The National Heart, Lung, and Blood Advisory Council reviews applications for research grants, cooperative agreements, and training grants in heart, blood vessel, lung, and blood diseases and in blood resources, and recommends to the Director, NIH, scientific projects that merit support.

In its advisory role, the Council advises the Secretary, HHS, the Assistant Secretary for Health, 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. As stated in its charter, the Council also "may review any grant, contract, or cooperative agreement proposed to be made or entered into by the Institute; may make recommendations to the Director of the Institute respecting research conducted at the Institute; may collect, by correspondence or by personal investigation, information as to studies that are being carried on in the United States or any other country with respect to the cause, prevention, diagnosis, and treatment of heart, blood vessel, lung, and blood diseases, and to the use of blood and blood products and the management of blood resources and with the approval of the Director of the Institute, make available such information through appropriate publications for the benefit of public and private health entities and health professions personnel and scientists and for the information of the general public; and may appoint subcommittees and convene workshops and conferences." The Council may also make recommendations to the Director, NIH, and other authorized officials regarding the acceptance of conditional gifts pursuant to section 2501 of the Public Health Service Act.

Meetings

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

National Heart, Lung, and Blood Advisory Council Membership*

Claude Lenfant, M.D.
(Chair)
National Heart, Lung, and Blood Institute

Francois M. Abboud, M.D. (1999)
University of Iowa Hospital and Clinics

K. Frank Austen, M.D. (1996)
Harvard Medical School

Donald Bartlett, Jr., M.D. (1999)
Dartmouth Medical School

Ernest Beutler, M.D. (1997)
The Scripps Research Institute

Joseph R. Bove, M.D. (1996)
Yale University School of Medicine

Aram V. Chobanian, M.D. (1996)
Boston University School of Medicine

Harvey R. Colten, M.D. (1998)
Washington University School of Medicine

James D. Crapo, M.D. (1997)
Duke University Medical Center

Willa A. Hsueh, M.D. (1997)
University of Southern California
Medical Center

Karen A. Matthews, M.D. (1997)
University of Pittsburgh

Frank M. McClellan (1996)
Eaton and McClellan

Albert Oberman, M.D., M.P.H. (1996)
University of Alabama at Birmingham

Carmen Ramos-Bonoan, M.D. (1999)
Child Health Clinics of New York City
Health and Hospitals Corporation

John D. Rudd, M.D. (1998)
Murfreesboro, Tennessee

Judith L. Swain, M.D. (1998)
University of Pennsylvania

Reginald L. Washington, M.D. (1998)
University of Colorado Health Sciences Center

Kenneth K. Wu, M.D. (1998)
University of Texas Medical School at Houston

Ex Officio Members

Yancy Y. Phillips, M.D.
Walter Reed Army Medical Center

Donna Shalala, Ph.D.
Department of Health and Human Services

Pamela Steele, M.D.
Department of Veterans Central Office

Harold Varmus, M.D.
National Institutes of Health

* Current as of October 1996. The current roster, containing full addresses for the NHLBI Advisory Council and Committees, can be obtained from NHLBI's home page on the World Wide Web at http://www.nhlbi.nih.gov/nhlbi/meet/meet.htm.

Program Advisory and Review Committees

Sickle Cell Disease Advisory Committee

Chair: Cage S. Johnson, M.D., University of Southern California

Executive Secretary: Clarice D. Reid, M.D., Director, Division of Blood Diseases and Resources, NHLBI, National Institutes of Health, Bethesda, Maryland 20892, (301) 435-0080

The Sickle Cell Disease Advisory Committee advises the Secretary, HHS; the Assistant Secretary for Health, HHS; and the Directors of the NIH, NHLBI, and Division of Blood Diseases and Resources, NHLBI, 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*

Faye Z. Belgrave, Ph.D. (1996)
George Washington University

Iris D. Buchanan, M.D. (1999)
Southwood Medical Office of Kaiser Permanente

Samuel Charache, M.D. (1996)
The Johns Hopkins Hospital

Jessica G. Davis, M.D. (1999)
Cornell University Medical Center

James R. Eckman, M.D. (1998)
Emory University School of Medicine

Mary Ellen Fabry, Ph.D. (1998)
Albert Einstein College of Medicine

William C. Mentzer, Jr., M.D. (1999)
San Francisco General Hospital

June Vavasseur, M.P.H. (1997)
Consultant
Pomona, California

Charles F. Whitten, M.D. (1996)
Wayne State University School of Medicine

Ex Officio Members

John T. Farrar, M.D.
Department of Veterans Affairs

Enrique Mendez, Jr., M.D.
Department of Defense

David A. Satcher, M.D.
Centers for Disease Control and Prevention

Ciro V. Sumaya, M.D.
Health Resources and Services Administration

Harold Varmus, M.D.
National Institutes of Health

Sleep Disorders Research Advisory Board

Chair: Thomas Roth, Ph.D., Henry Ford Hospital

Executive Secretary: James P. Kiley, Ph.D., Director, National Center on Sleep Disorders Research, NHLBI, National Institutes of Health, Bethesda, Maryland 20892, (301) 435-0199

The Sleep Disorders Research Advisory Board advises the Directors of the NIH, NHLBI, and National Center on Sleep Disorders Research on matters related to the scientific activities carried out by and through the Center and policies respecting such activities, including the identification of research priorities for coordination of sleep and sleep disorders research by the NIH and other Federal, professional, and voluntary organizations. The Board advises the Director of the Center on areas and approaches that should be addressed by the Center's targeted programs, including the identification of basic, clinical, and health education topics of importance to national health fields.

Membership*

Sudhansu Chokroverty, M.D. (1998)
Robert Wood Johnson Medical School

Martha U. Gillette, Ph.D. (1999)
University of Illinois

J. Christian Gillin, M.D. (1997)
University of California at San Diego

Victoria P. Haulcy, M.P.H. (1999)
Institute for Healthcare Quality

* Current as of October 1996.

Sleep Disorders Research Advisory Board (continued)

Carla G. Kidd (1998)
Consultant
Greenwich, Connecticut

Allan I. Pack, M.B., Ch.B., Ph.D. (1997)
Hospital of the University of Pennsylvania

Barbara A. Phillips, M.D. (1997)
University of Kentucky and Columbia Hospital

Fred W. Turek, Ph.D. (2000)
Northwestern University

Carol U. Walker (2000)
Restless Legs Syndrome Foundation

James K. Walsh, Ph.D. (1997)
St. Luke's Hospital

Ex Officio Members

Duane F. Alexander, M.D.
NICHD, National Institutes of Health

Steven E. Hyman, M.D.
NIMH, National Institutes of Health

John T. Farrar, M.D.
Department of Veterans Affairs

Zach W. Hall, Ph.D.
NINDS, National Institutes of Health

Richard J. Hodes, M.D.
NIA, National Institutes of Health

Philip Lee, M.D.
Department of Health and Human Services

Claude Lenfant, M.D.
NHLBI, National Institutes of Health

Enrique Mendez, Jr., M.D.
Department of Defense

Harold Varmus, M.D.
National Institutes of Health

Clinical Trials Review Committee

Chair: Robert A. Wise, M.D., The Johns Hopkins Asthma and Allergy Center

Scientific Review Administrator: Joyce A. Hunter, Ph.D., Health Science Administrator, Division of Extramural Affairs, NHLBI, National Institutes of Health, Bethesda, Maryland 20892, (301) 435-0287

The Clinical Trials Review Committee provides initial technical merit review for the National Heart, Lung, and Blood Advisory Council and the Director of the NHLBI on clinical trial applications for the support of studies to evaluate preventive or therapeutic measures of blood, cardiovascular, or lung diseases.

Membership*

Barbara M. Alving, M.D. (1997)
Walter Reed Army Institute of Research

Moses S.S. Chow, Pharm.D. (2000)
Hartfort Hospital

Clarence E. Davis, Ph.D. (1998)
University of North Carolina

Patricia J. Elmer, Ph.D. (2000)
University of Minnesota

Kenneth A. Jamerson, M.D. (2000)
University of Michigan Medical Center

Robert C. Klesges, Ph.D. (1999)
The University of Memphis

Gervasio A. Lamas, M.D. (1997)
Mt. Sinai Medical Center

Kerry L. Lee, Ph.D. (1999)
Duke University Medical Center

Hiltrud S. Mueller, M.D. (1999)
Albert Einstein College of Medicine

Pamela Ouyang, M.D. (1998)
The Johns Hopkins Bayview Medical Center

Polly E. Parsons, M.D. (2000)
University of Colorado Health Sciences Center

Laura L. Perkins, Ph.D. (1999)
Dow Corning Corporation

Paula K. Roberson, Ph.D. (1998)
University of Arkansas for Medical Sciences

Elliott P. Vichinsky, M.D. (1998)
Sickle Cell Center Children's Hospital

* Current as of October 1996.

Heart, Lung, and Blood Program Project Review Committee

Chair: Harold R. Roberts, M.D., University of North Carolina

Scientific Review Administrator: Jeffery H. Hurst, Ph.D., Health Scientist Administrator, Division of Extramural Affairs, NHLBI, National Institutes of Health, Bethesda, Maryland 20892, (301) 435-0303

The Heart, Lung, and Blood Program Project Review Committee provides initial technical merit review for the National Heart, Lung, and Blood Advisory Council and the Director, NHLBI, on program project applications proposing research in the areas of heart, lung, and blood diseases and resources.

Membership*

Carol B. Basbaum, Ph.D. (1999)
University of California, San Francisco

Vernon S. Bishop, Ph.D. (2000)
University of Texas Health Sciences Center

Paul E. Dicorleto, Ph.D. (1999)
Cleveland Clinic Foundation

Donald T. Frazier, Ph.D. (1997)
University of Kentucky College of Medicine

Katherine A. Hajjar, M.D. (1997)
Cornell University Medical College

Robert P. Hebbel, M.D. (1999)
University of Minnesota Medical School

Judith S. Hochman, M.D. (2000)
Columbia University

John R. Hoidal, M.D. (1998)
University of Utah

Gary W. Hunninghake, M.D. (1999)
University of Iowa College of Medicine

Eduardo Marban, M.D., Ph.D. (2000)
The Johns Hopkins University School of Medicine

Jere H. Mitchell, M.D. (1997)
University of Texas Southwestern Medical Center

Elizabeth G. Nabel, M.D. (1999)
University of Michigan Medical Center

Alberto Nasjletti, M.D. (1999)
New York Medical College

Peter J. Newman, Ph.D. (1998)
The Blood Center of Southeastern Wisconsin

Peter J. Quesenberry, M.D. (1998)
University of Massachusetts Medical Center

Mary Sorci-Thomas, Ph.D. (2000)
Wake Forest University

John V. Weil, M.D. (1997)
University of Colorado

National Heart, Lung, and Blood Institute Special Emphasis Panel

The Institute has established the National Heart, Lung, and Blood Institute Special Emphasis Panel (SEP) to perform initial peer review of applications and proposals that were previously handled by ad hoc committees. Concept review, previously handled by divisional program advisory committees, has also been incorporated into the SEP system. The SEP, which has neither a fixed membership nor a set meeting schedule, is constituted to provide required peer review expertise at precisely the time that it is needed.

Board of Scientific Counselors

Chair: James T. Stull, Ph.D., University of Texas Southwestern Medical Center at Dallas

Executive Secretary: Edward D. Korn, Ph.D., Director, Division of Intramural Research, NHLBI, National Institutes of Health, Bethesda, Maryland 20892, (301) 496-2116

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

Membership*

Kenneth R. Chien, M.D., Ph.D. (1997)
University of California at San Diego

* Current as of October 1996.

Board of Scientific Counselors (continued)

John A. Glomset, M.D., Ph.D. (2000)
Howard Hughes Medical Institute

Lorraine J. Gudas, Ph.D. (2001)
Cornell University Medical Center

Claudia Kent, M.D., Ph.D. (1997)
University of Michigan Medical School

Jeffrey M. Leiden, M.D., Ph.D. (1998)
University of Chicago

Peter Libby, M.D. (2001)
Harvard Medical School

Alan R. Tall, M.D. (2000)
Columbia University

7. Fiscal Year 1996 Budget Overview

NHLBI Obligations by Budget Mechanism: Fiscal Year 1996

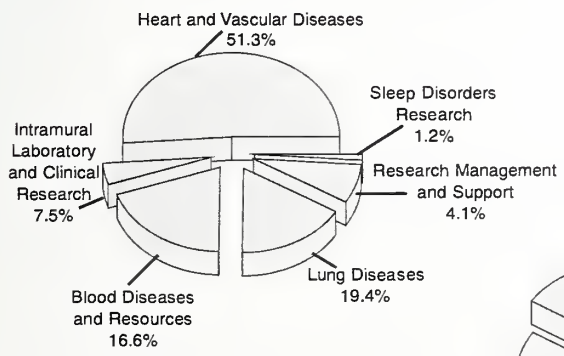
Budget Mechanism	Obligated Dollars FY 1996* (Dollars in Thousands)	Percent of Total NHLBI FY 1996 Budget
Research Project Grants†	$862,027	63.8%
Specialized Centers of Research (SCOR)	87,515	6.5
Sickle Cell Centers	19,173	1.4
Other Research Grants	56,692	4.2
Research Career Programs	(33,862)	(2.5)
Training Programs	48,487	3.6
Research and Development Contracts	120,927	8.9
Intramural Laboratory and Clinical Research	101,753	7.5
Research Management and Support‡	54,848	4.1
Research Facilities Construction Grants	0	0.0
Total, NHLBI	**$1,351,422**	**100.0%**

* Excludes money provided by other agencies by means of a reimbursable agreement.

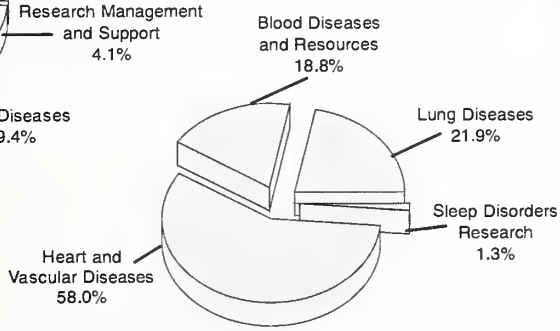
† Includes $25,588 for Small Business Innovation Research (SBIR) Grants.

‡ Excludes OD and DIR research contracts, which are included in R&D contracts.

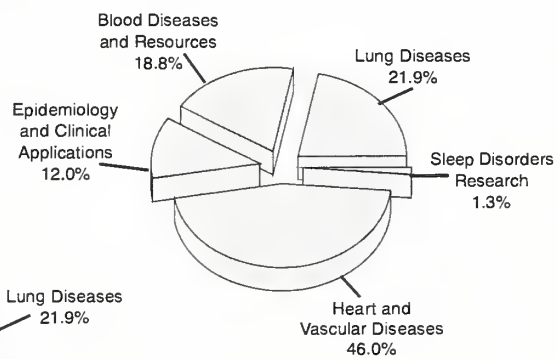
NHLBI Total Obligations by Budget Category



NHLBI Extramural Obligations by Program



NHLBI Extramural Obligations by Division



For detailed data on FY 1996

- research grants, see Chapters 9 and 11;
- research and development contracts, see Chapters 10 and 11;
- research training and career development, see Chapter 12; and
- geographic distribution of awards, see Chapter 13.

NHLBI Obligations by Program: Fiscal Year 1996

Program	Obligated Dollars FY 1996 (Dollars in Thousands)	Percent of NHLBI Extramural FY 1996 Budget
Heart and Vascular Diseases*	$692,757	58.0%
Lung Diseases	261,923	21.9
Blood Diseases and Resources	224,258	18.8
Sleep Disorders Research	15,883	1.3%
Total, Extramural Obligations	**$1,194,821**	**100.0%**

* Includes Heart and Vascular Diseases and Epidemiology and Clinical Applications.

NHLBI Heart and Vascular Diseases Program* Obligations by Budget Mechanism: Fiscal Year 1996

Budget Mechanism	Obligated Dollars (Dollars in Thousands)	Percent of Program Budget
Research Project Grants	$516,871	74.6%
Specialized Centers of Research (SCOR)	41,084	5.9
Other Research Grants	24,738	3.6
Research Career Programs	(14,828)	(2.1)
Training Programs	29,691	4.3
Research and Development Contracts	80,373	11.6
Total, Heart and Vascular Diseases	**$692,757**	**100.0%**

* The following table shows obligations by budget mechanism, FY 1996, for Epidemiology and Clinical Applications, which are included in the Heart and Vascular Diseases Program.

Budget Mechanism	Obligated Dollars (Dollars in Thousands)	Percent of Epidemiology and Clinical Applications Budget
Research Project Grants	$92,915	64.9%
Specialized Centers of Research (SCOR)	0	0.0
Other Research Grants	1,518	1.1
Research Career Programs	(670)	(0.5)
Training Programs	2,967	2.0
Research and Development Contracts	45,846	32.0
Total, Epidemiology and Clinical Applications	**$143,246**	**100.0%**

NHLBI Lung Diseases Program
Obligations by Budget Mechanism: Fiscal Year 1996

Budget Mechanism	Obligated Dollars (Dollars in Thousands)	Percent of Program Budget
Research Project Grants	$175,211	66.9%
Specialized Centers of Research (SCOR)	33,233	12.7
Other Research Grants	21,472	8.2
Research Career Programs	(11,906)	(4.6)
Training Programs	10,975	4.2
Research and Development Contracts	21,032	8.0
Total, Lung Diseases	**$261,923**	**100.0%**

NHLBI Blood Diseases and Resources Program
Obligations by Budget Mechanism: Fiscal Year 1996

Budget Mechanism	Obligated Dollars (Dollars in Thousands)	Percent of Program Budget
Research Project Grants	$158,385	70.6%
Specialized Centers of Research (SCOR)	29,467	13.1
Other Research Grants	9,425	4.2
Research Career Programs	(6,082)	(2.7)
Training Programs	7,459	3.3
Research and Development Contracts	19,522	8.7
Total, Blood Diseases and Resources	**$224,258**	**100.0%**

NHLBI Sleep Disorders Research Program
Obligations by Budget Mechanism: Fiscal Year 1996

Budget Mechanism	Obligated Dollars (Dollars in Thousands)	Percent of Program Budget
Research Project Grants	$11,560	72.8%
Specialized Centers of Research (SCOR)	2,904	18.3
Other Research Grants	1,057	6.7
Research Career Programs	(1,045)	(6.6)
Training Programs	362	2.3
Research and Development Contracts	0	0.0
Total, Sleep Disorders Research	**$15,883**	**100.0%**

8. Long-Term Trends

Budget History of the NHLBI: Fiscal Years 1950-96

(Dollars in Thousands)

Fiscal Year	Budget Estimate to Congress	House Allowance	Senate Allowance	Appropriation	Obligations	Cumulative Fiscal Year Obligations
1950	$ 34,630	$ 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	327,270	2,631,253
1975	309,299	321,196	330,000	327,996	327,953	2,959,206
1976	324,934	329,079	379,059	370,096	368,648	3,327,854
TQ[1]	59,715	58,015	58,015	58,763	60,639	3,388,493
1977	342,855	380,661	420,661	396,661	396,857[2]	3,785,350
1978	403,642	432,642	456,000	447,901	447,968[2]	4,233,318
1979	454,336	485,584	485,584	510,134	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[2]	5,820,718
1982	579,602	583,831	587,741	559,637	559,800[2]	6,380,518
1983	577,143	620,947	624,542	624,259	624,260[2]	7,004,778
1984	639,774	665,859	683,489	704,939	705,064	7,709,842
1985	718,852	764,135	807,149	805,269	803,810	8,513,652
1986	775,254	856,388	863,652	859,239	821,901	9,335,553
1987	785,697	921,410	921,502	930,001	929,982	10,265,535
1988	821,887	990,808	1,000,349	965,536	965,283	11,230,818
1989	1,054,503	1,018,983	1,056,003	1,045,985	1,045,508	12,276,325
1990	1,039,846	1,090,930	1,091,597	1,072,354	1,070,683	13,347,008
1991	1,112,502	1,135,589	1,137,235	1,126,942	1,125,915	14,472,923
1992	1,209,924	1,202,398	1,190,396	1,191,500	1,190,070	15,662,993
1993	1,245,396	1,228,455	1,228,455	1,214,792	1,214,693	16,877,686
1994	1,198,402	1,277,880	1,277,880	1,277,880	1,277,852	18,155,538
1995	1,266,961	1,259,590	1,259,590	1,258,472[3]	1,314,969[4]	19,470,507
1996	1,337,021	1,355,866	1,320,254[5]	1,355,866	1,351,422[6]	20,821,929

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

[2] Exceeds appropriation due to collection of outside reimbursements.

[3] Excludes funds for HIV research activities consolidated in the NIH Office of AIDS Research (OAR) in FY 1995 and FY 1996.

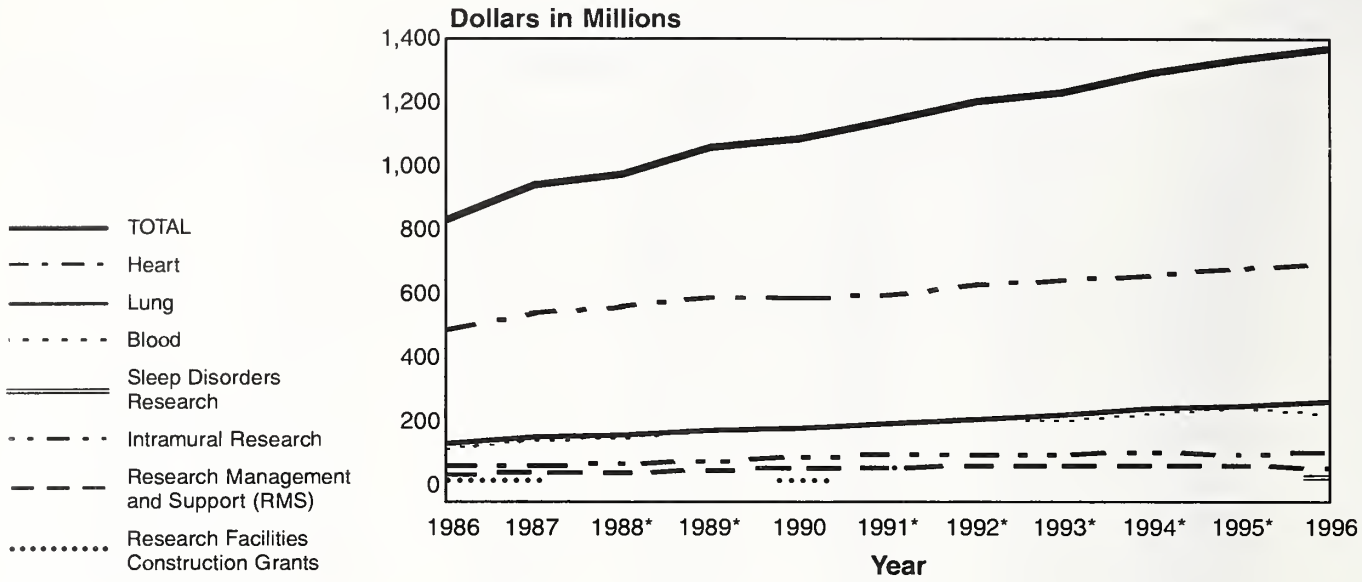
[4] Reflects an administrative expenses rescission of $1,098,000 and includes transfer of $55,485,000 from OAR for AIDS research and $2,125,000 from the 1 percent authority of the Director, NIH.

[5] Senate Allowance reflects the Institute share of the government-wide rescission ($495,000) and the Labor/HHS/Education rescission ($425,000), in accordance with P.L. 104-134.

[6] Senate Obligations reflects the Institute share of the government-wide rescission ($495,000) and the Labor/HHS/Education rescission ($425,000), in accordance with P.L. 104-134 and a transfer of $3,506,000 from the NHLBI under the 1 percent authority of the Director, NIH.

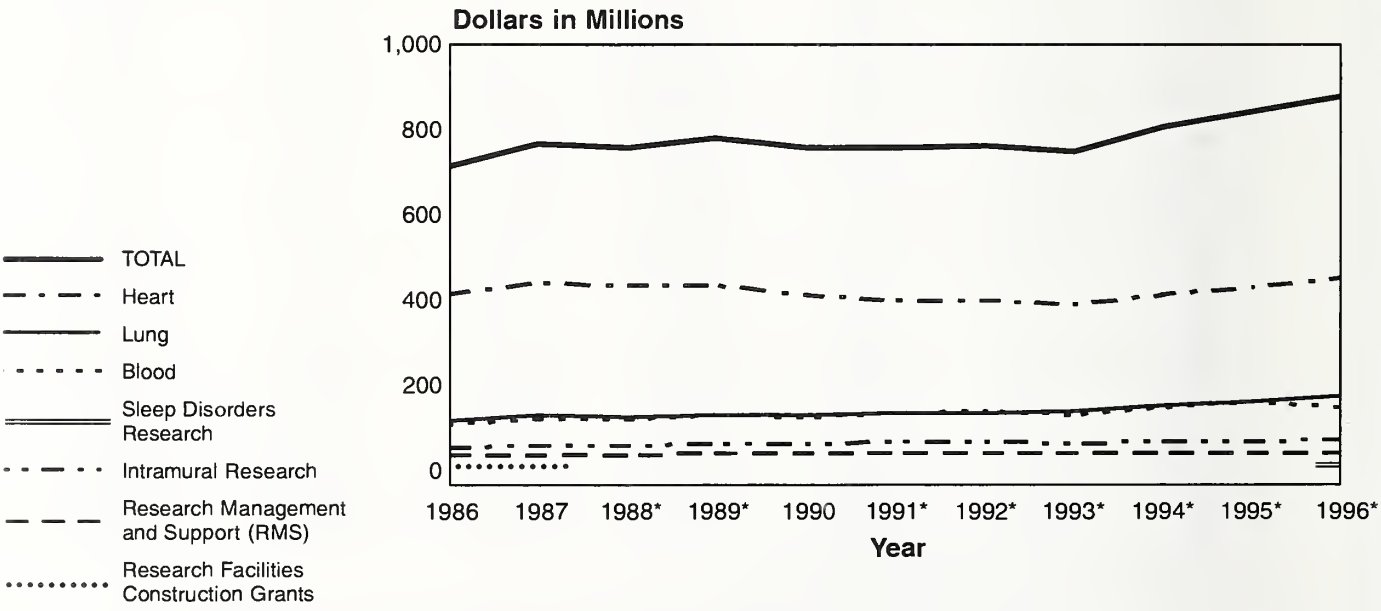
NHLBI Total Obligations by Budget Category: Fiscal Years 1986-96

Current Dollars



NHLBI Total Obligations by Budget Category: Fiscal Years 1986-96

Constant 1986 Dollars



* No funds were available for Research Facilities Construction Grants, FY 1988-89 and FY 1991-96.

NHLBI Total Obligations by Budget Category: Fiscal Years 1986-96*

Current Dollars (Millions)

	Fiscal Year												
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Increase 1986-96	Percent Increase 1986-96
Heart	$475.1	$533.1	$552.2	$581.7	$579.6	$589.6	$619.5	$632.0	$651.7	$668.9	$692.8	$217.7	45.8%
Lung	130.0	151.2	154.3	171.4	177.0	193.8	203.4	221.6	238.7	243.0	261.9	131.9	101.5
Blood	118.5	140.9	148.7	169.3	175.2	195.9	211.9	203.5	227.4	244.6	224.3	105.8	89.3
Sleep Disorders Research	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.9	15.9	N/A
Intramural Research	59.5	63.6	68.0	77.0	85.5	93.7	97.1	98.2	101.7	98.9	101.8	42.3	71.0
Research Management and Support (RMS)	35.7	38.9	42.1	46.1	52.7	52.9	58.2	59.4	58.4	59.5	54.8	19.1	53.6
Research Facilities Construction Grants	3.1	2.3	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	(3.1)	N/A
Total	**$821.9**	**$930.0**	**$965.3**	**$1,045.5**	**$1,070.7**	**$1,125.9**	**$1,190.1**	**$1,214.7**	**$1,277.9**	**$1,314.9**	**$1,351.4**	**$529.5**	**63.4%**

Constant 1986 Dollars (Millions)

	Fiscal Year												
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Increase 1986-96	Percent Increase 1986-96
Heart	$475.1	$506.3	$499.3	$500.2	$472.0	$458.1	$460.9	$454.7	$451.6	$448.6	$449.0	-$26.1	-5.5%
Lung	130.0	143.6	139.5	147.4	144.1	150.6	151.3	159.4	165.4	163.0	169.7	39.7	30.6
Blood	118.5	133.8	134.4	145.6	142.7	152.2	157.7	146.4	157.6	164.1	145.3	26.8	22.7
Sleep Disorders Research	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.3	10.3	N/A
Intramural Research	59.5	60.4	61.5	66.2	69.6	72.8	72.2	70.6	70.5	66.3	65.9	6.4	10.8
Research Management and Support (RMS)	35.7	36.9	38.1	39.6	42.9	41.1	43.3	42.7	40.5	39.9	35.5	-0.2	-0.4
Research Facilities Construction Grants	3.1	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-3.1	N/A
Total	**$821.9**	**$883.2**	**$872.8**	**$899.0**	**$871.3**	**$874.8**	**$885.5**	**$873.9**	**$856.6**	**$881.9**	**$875.7**	**$53.9**	**6.6%**

This table is based on the biomedical R&D price index (February 1996).
Note: Numbers may not add to total due to rounding.

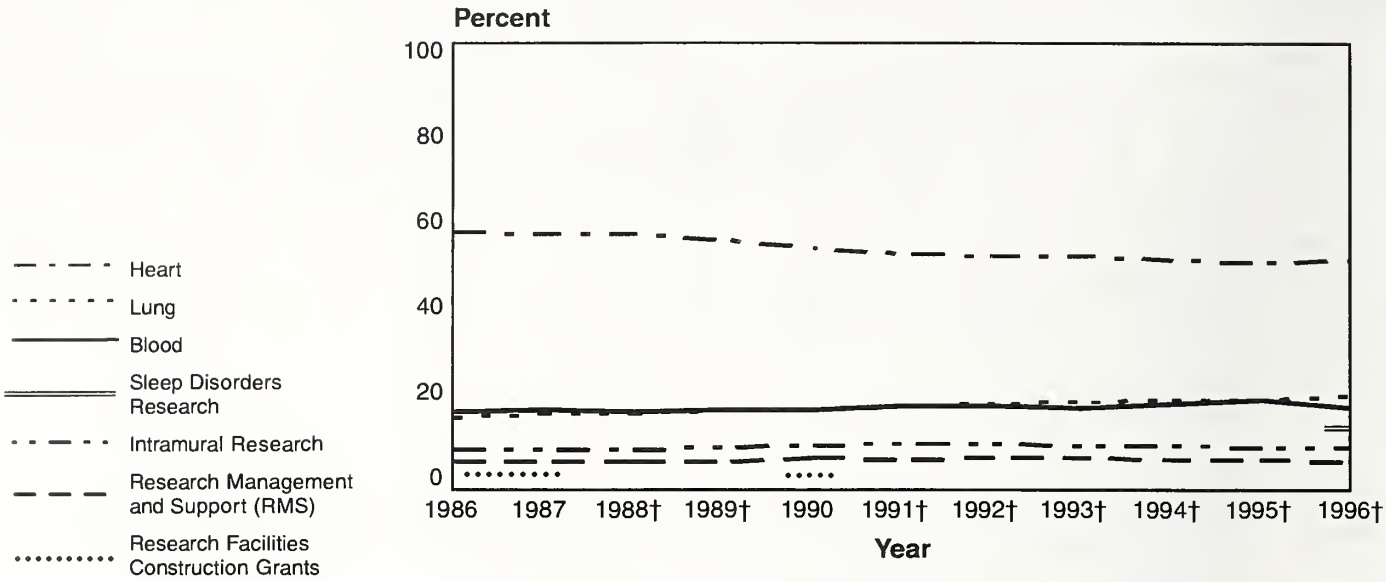
Percent of Total

	Fiscal Year										
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Heart	57.8	57.3	57.2	55.6	54.1	52.4	52.0	52.0	51.0	50.9	51.3
Lung	15.8	16.3	16.0	16.4	16.5	17.2	17.1	18.2	18.7	18.5	19.4
Blood	14.4	15.2	15.4	16.2	16.4	17.4	17.8	16.8	17.8	18.6	16.6
Sleep Disorders Research	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
Intramural Research	7.2	6.8	7.0	7.4	8.0	8.3	8.2	8.1	8.0	7.5	7.5
Research Management and Support (RMS)	4.3	4.2	4.4	4.4	4.9	4.7	4.9	4.9	4.6	4.5	4.1
Research Facilities Construction Grants	0.4	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

* Scientific evaluation grants included in program data.

NHLBI Total Obligations by Budget Category: Fiscal Years 1986-96*

Percent



* Excludes 0.4 percent for Research Facilities Construction Grants in FY 1986.

† No funds were available for Research Facilities Construction Grants, FY 1988-89 and FY 1991-96.

NHLBI Total Obligations and Employment: Fiscal Years 1986-96

		Staff*		
Fiscal Year	Obligations†	Division of Intramural Research	Research Management and Support (RMS)	Total
1986	821.9	238	384	622
1987	930.0	245	401	646
1988	965.3	246	417	663
1989	1,045.5	248	391	639
1990	1,070.7	266	412	678
1991	1,125.9	285	435	720
1992	1,190.1	283	442	725
1993	1,214.7	275	428	703
1994	1,277.9	262	415	677
1995	1,314.9	252	401	653
1996	1,351.4	248	401	649

* Full-time permanent as of the end of each FY.

† Dollars in millions.

NHLBI Total Obligations by Budget Mechanism: Fiscal Years 1986-96

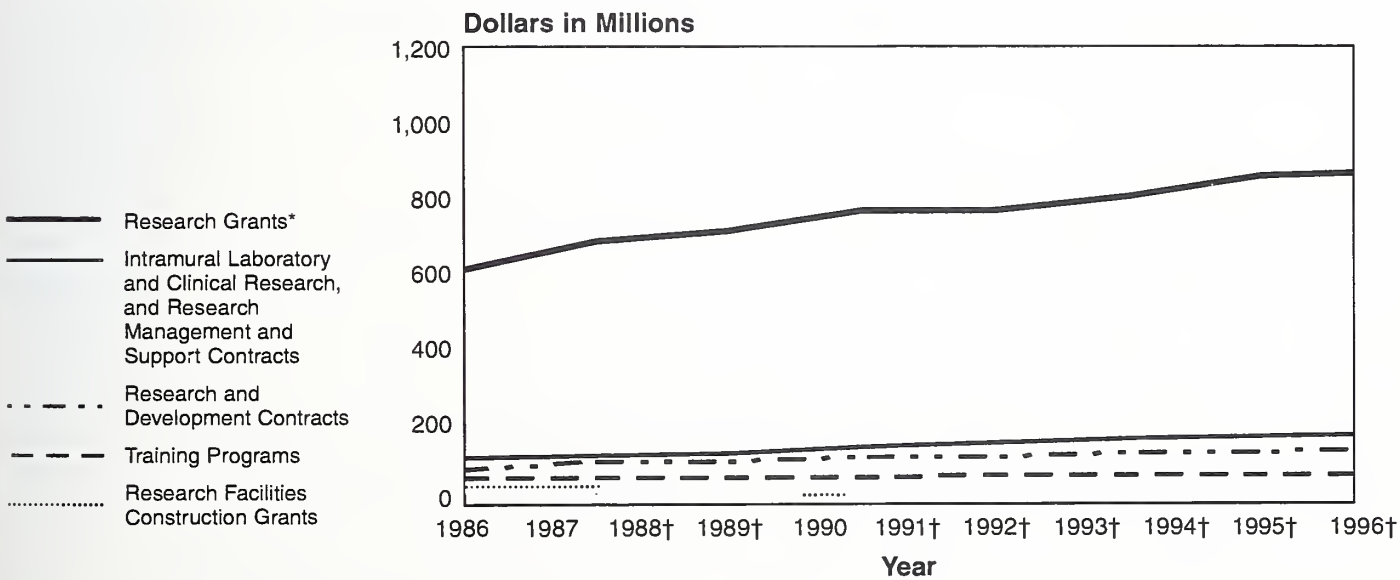
(Dollars in Millions)

Budget Mechanism	Fiscal Year 1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Research Grants*	$622.0	$703.7	$731.8	$785.7	$788.9	$824.9	$880.4	$895.3	$951.2	$982.6	$1,025.4
Research and Development (R&D) Contracts	63.0	82.3	83.9	96.7	98.4	108.7	107.7	117.5	118.3	125.9	120.9
Training Programs	38.5	39.2	39.5	39.9	44.4	45.8	46.7	44.3	48.3	48.0	48.5
Intramural Laboratory and Clinical Research (DIR), and Research Management and Support (RMS)	95.2†	102.5†	110.1†	123.2†	138.3†	146.5	155.3	157.6	160.1	158.4	156.6
Research Facilities Construction Grants	3.2	2.3	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0
Total, NHLBI	**$821.9**	**$930.0**	**$965.3**	**$1,045.5**	**$1,070.7**	**$1,125.9**	**$1,190.1**	**$1,214.7**	**$1,227.9**	**$1,314.9**	**$1,351.4**

* Includes Research Career Programs.

† Excludes Office of the Director and DIR research contracts, which are included in R&D contracts.

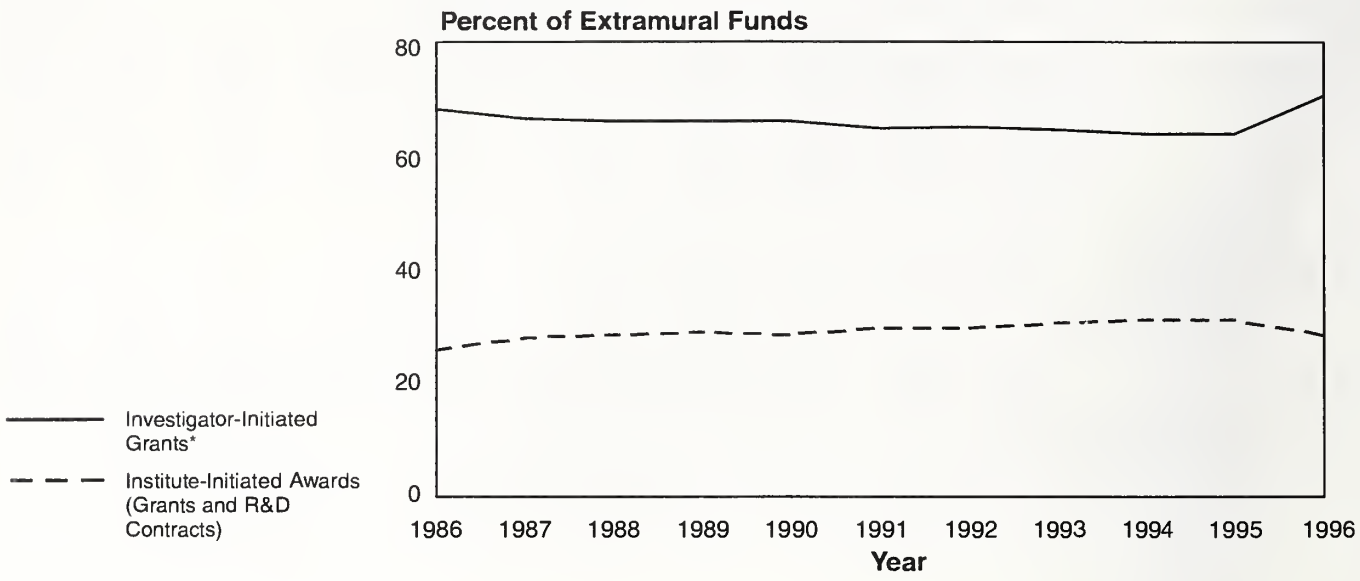
NHLBI Total Obligations by Budget Mechanism: Fiscal Years 1986-96



* Includes Research Career Programs.

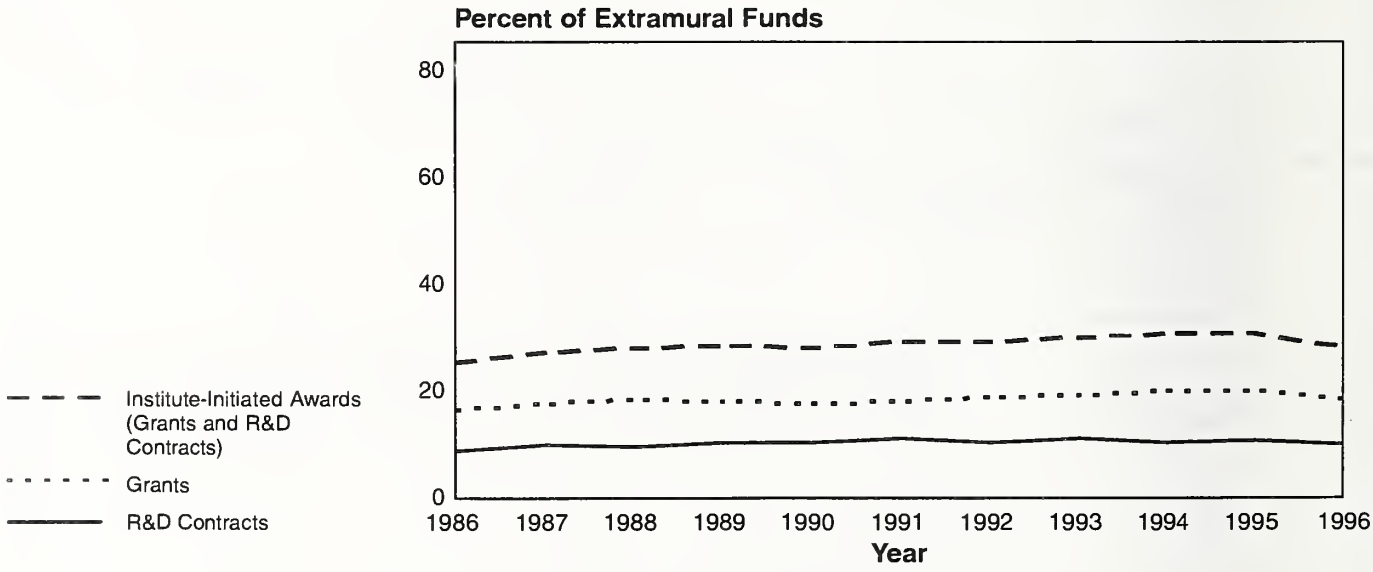
† No funds were available for Research Facilities Construction Grants, FY 1988-89 and FY 1991-96.

NHLBI Institute-Initiated and Investigator-Initiated Awards: Fiscal Years 1986-96



* Includes Research Career Programs.

NHLBI Grants and Research and Development Contracts as Subsets of Institute-Initiated Awards: Fiscal Years 1986-96



NHLBI Extramural Programs: Fiscal Years 1986-96

Dollars

(Dollars in Millions)

Budget Mechanism	Fiscal Year 1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Investigator-Initiated Awards											
Investigator-Initiated Grants*	$478.3	$532.7	$548.7	$592.5	$598.1	$616.3	$654.8	$663.2	$669.7	$725.0	$815.5
Research Career Programs K04, K06	18.8	20.6	21.0	20.3	21.5	22.8	23.0	23.1	25.1	25.7	28.9
Subtotal	497.1	553.3	569.7	612.8	619.6	639.1	677.8	686.3	724.8	750.7	844.4
Institute-Initiated Awards											
Grants (RFAs)	124.9	150.4	162.1	173.0	169.4	185.8	202.6	209.0	226.4	231.9	216.8
(Centers)	(82.4)	(87.4)	(88.9)	(87.9)	(88.4)	(92.2)	(96.5)	(96.6)	(101.5)	(107)	(87.5)
R&D Contracts (RFPs)	63.0	82.3	83.9	96.7	98.4	108.7	107.7	117.5	118.3	125.9	116.7
Subtotal	187.9	232.7	246.0	269.7	267.8	294.5	310.3	326.5	344.7	357.8	333.5
Training	38.5	39.2	39.5	39.9	44.4	45.8	46.7	44.3	48.2	48.0	48.5
Total, Extramural	**$723.5**	**$825.2**	**$855.2**	**$922.4**	**$931.8**	**$979.4**	**$1,034.8**	**$1,057.1**	**$1,117.7**	**$1,156.5**	**$1,226.4**

NHLBI Extramural Programs: Fiscal Years 1986-96

Percent

(As Percent of Total Extramural Funds)

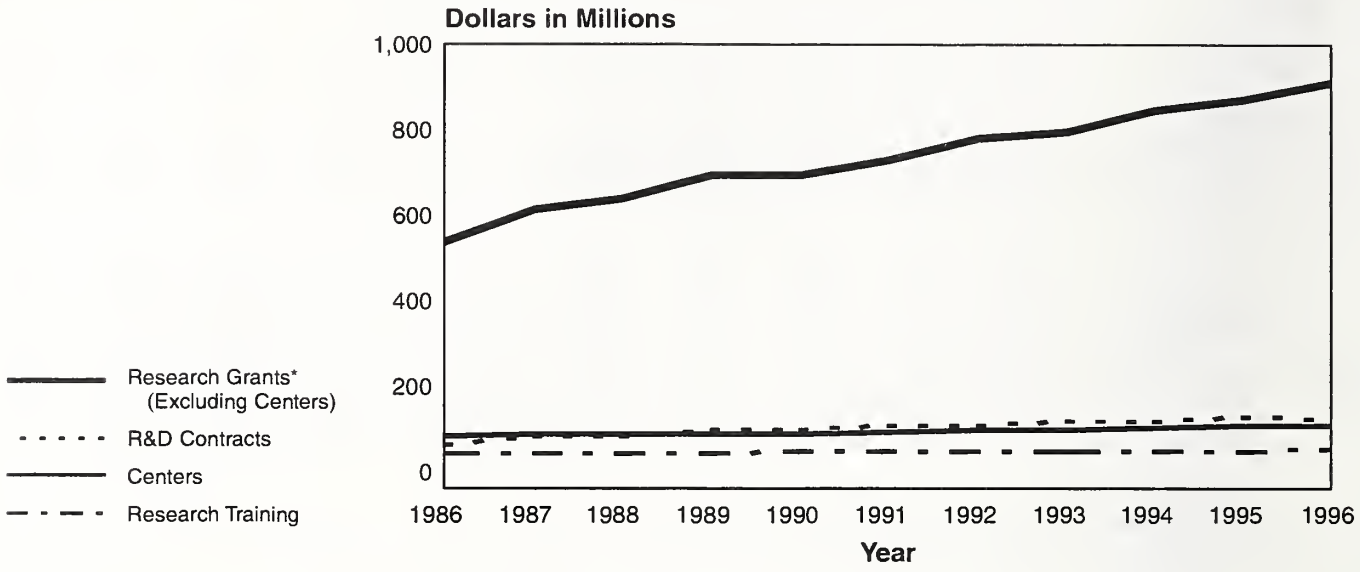
Budget Mechanism	Fiscal Year 1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Investigator-Initiated Awards											
Investigator-Initiated Grants*	66.1	64.5	64.2	64.2	64.0	62.9	63.2	62.7	62.6	62.7	69.2
Research Career Programs K04, K06	2.6	2.5	2.4	2.3	2.6	2.3	2.3	2.2	2.3	2.2	2.5
Subtotal	68.7	67.1	66.6	66.5	66.6	65.2	65.5	64.9	64.9	64.9	71.7
Institute-Initiated Awards											
Grants (RFAs)	17.3	18.2	19.0	18.7	18.1	19.0	19.6	19.8	20.2	20.1	18.4
(Centers)	(11.4)	(10.6)	(10.4)	(9.5)	(9.5)	(9.4)	(9.3)	(9.1)	(9.1)	(9.2)	(7.4)
R&D Contracts (RFPs)	8.7	10.0	9.8	10.5	10.6	11.1	10.4	11.1	10.6	10.9	9.9
Subtotal	26.0	28.2	28.8	29.2	28.6	30.1	30.0	30.9	30.8	31.0	28.3
Training	5.3	4.8	4.6	4.3	4.8	4.7	4.5	4.2	4.3	4.1	4.1
Total, Extramural	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

* Includes all R18s.

Note: Numbers may not add to total due to rounding.

NHLBI Extramural Research Funding Mechanism: Fiscal Years 1986-96

Dollars



NHLBI Extramural Research Funding Mechanism: Fiscal Years 1986-96

Dollars

(Dollars in Millions)

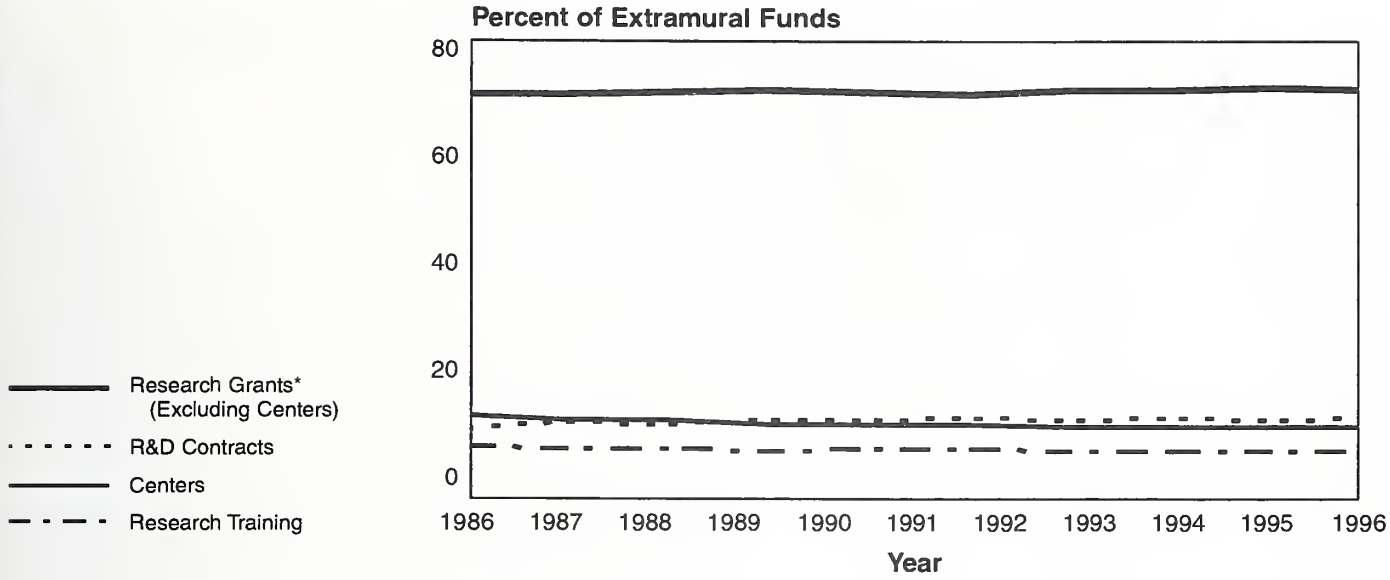
Budget Mechanism	Fiscal Year 1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Research Grants* (Excluding Centers)	$539.7	$616.3	$642.9	$697.9	$700.6	$732.7	$783.9	$798.7	$849.7	$875.7	$918.7
Centers	82.4	87.4	88.9	87.9	88.4	92.2	96.5	96.6	101.5	107.0	106.7
R&D Contracts	63.0	82.3	83.9	96.7	98.4	108.7	107.7	117.5	118.3	125.9	120.9
Research Training	38.5	39.2	39.5	39.9	44.4	45.8	46.7	44.3	48.3	48.0	48.5
Total, Extramural	**$723.6**	**$825.2**	**$855.2**	**$922.4**	**$931.8**	**$979.4**	**$1,034.8**	**$1,057.1**	**$1,117.8**	**$1,156.6**	**$1,194.8**

* Includes Research Career Programs.

Note: Numbers may not add to total due to rounding.

NHLBI Extramural Research Funding Mechanism: Fiscal Years 1986-96

Percent



NHLBI Extramural Research Funding Mechanism: Fiscal Years 1986-96

Percent

	(Percent)										
	Fiscal Year										
Budget Mechanism	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**
Research Grants* (Excluding Centers)	74.6	74.7	75.2	75.7	75.2	74.8	75.8	75.6	76.0	75.7	76.9
Centers	11.4	10.6	10.4	9.5	9.5	9.4	9.3	9.1	9.1	9.2	8.9
R&D Contracts	8.7	10.0	9.8	10.5	10.6	11.1	10.4	11.1	10.6	10.9	10.1
Research Training	5.3	4.8	4.6	4.3	4.8	4.7	4.5	4.2	4.3	4.2	4.1
Total, Extramural	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

* Includes Research Career Programs.

9. Research Grants

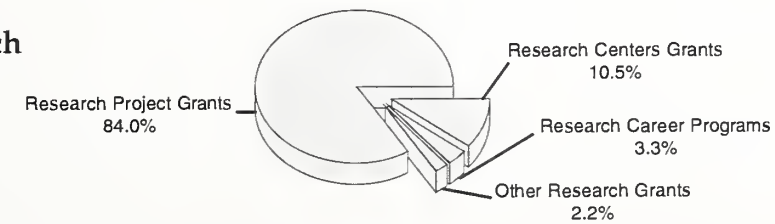
NHLBI Research Grants by Activity: Fiscal Year 1996

	Number of Grants Obligated	Total Cost (Dollars in Thousands)	Percent of Total NHLBI Research Grant Dollars
Research Project Grants (RPGs)*			
Regular Research Grants (R01)	1,976	$507,983	49.75%
Small Research Grants (R03)	15	903	0.09
Program Project Grants (P01)	150	203,603	19.94
Cooperative Agreements (U01)	109	44,752	4.38
Area Grants (R15)	—	22	0.00
Transition Award (R29)	294	30,613	3.00
Method to Extend Research in Time (MERIT) (R37)	152	43,978	4.31
Shannon Awards (R55)	3	150	0.01
Subtotal	2,699	832,004	81.48
Small Business Technology Transfer (STTR Phase I) (R41)	10	982	0.10
Small Business Technology Transfer (STTR Phase II) (R42)	3	816	0.08
Small Business Innovation Research (SBIR Phase I) (R43)	80	7,673	0.75
Small Business Innovation Research (SBIR Phase II) (R44)	50	16,117	1.58
Subtotal, Small Business	143	25,588	2.51
Subtotal, Research Project Grants	2,842	857,592	83.99
Research Centers Grants			
Specialized Centers of Research (SCOR) (P50)	68	87,515	8.57
Sickle Cell Centers (P60)	10	19,173	1.88
Subtotal, Research Centers Grants	78	106,688	10.45
Research Career Programs			
Research Scientist Development Award (K01)	3	207	0.02
Research Career Development Award (K04)	25	1,693	0.17
Research Career Award (RCA) (K06)	3	105	0.01
Transfusion Medicine Academic Award (TMAA) (K07)	2	326	0.03
Pulmonary Vascular Academic Award (PVAA) (K07)	11	1,715	0.17
Tuberculosis Academic Award (K07)	19	1,496	0.15
Asthma Academic Award (K07)	9	740	0.07
Sleep Academic Award (K07)	8	699	0.07
Clinical Investigator Development Award (CIDA) (K08)	254	21,093	2.07
Physician Scientist Award (PSA) (K11)	12	1,023	0.10
Minority School Faculty Development Award (K14)	15	1,158	0.11
Research Development Award for Minority Faculty (K14)	36	3,607	0.35
Subtotal, Research Career Programs	397	33,862	3.32
Other Research Grants			
Cooperative Clinical Research (R10, U10)	39	16,960	1.66
Historical Black College and University Scientist Award (UH1)	5	250	0.02
Minority Biomedical Research Support (S06, S14)	—	2,502	0.25
Demonstration and Education Programs (R18)	1	790	0.08
Other (R09, R13, R25, T15, U09, U13)	16	2,328	0.23
Subtotal, Other Research Grants	61	22,830	2.24
Total, NHLBI Research Grants	**3,378**	**$1,020,972**	**100.00%**

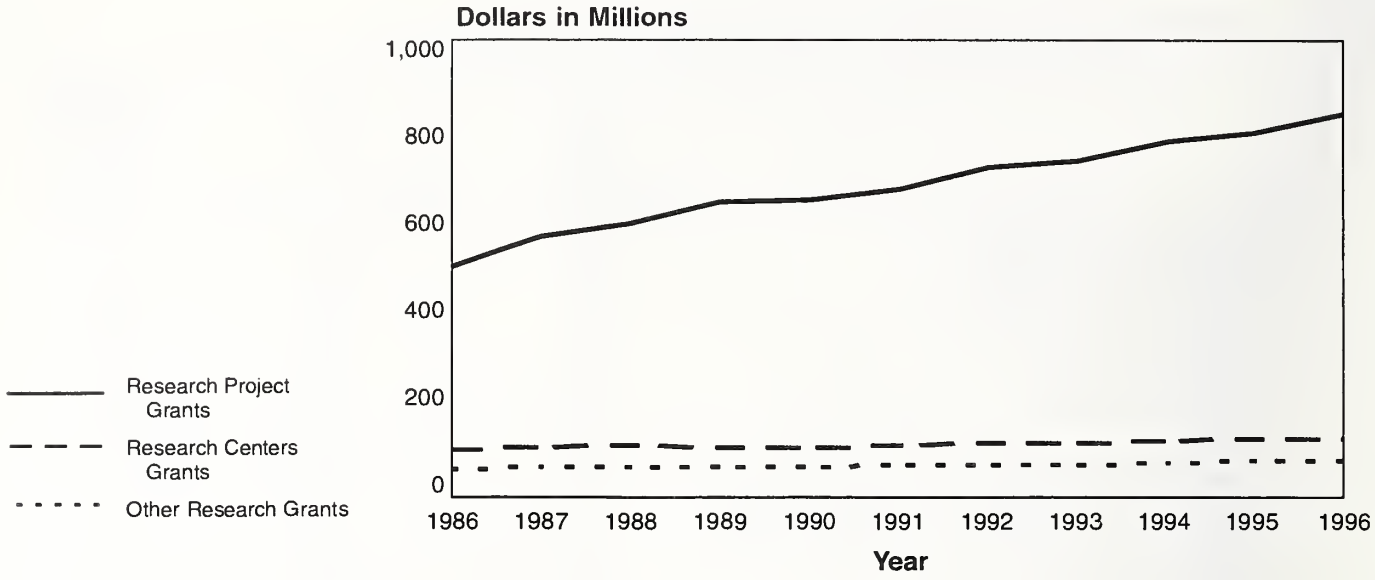
For descriptions of grants, see pages 139-42.

*Excludes $4,435,000 program evaluation assessment.

NHLBI Total Research Grants by Category



NHLBI Research Project Grant,* Research Centers Grant, and Other Research Grant Obligations: Fiscal Years 1986-96



NHLBI Research Project Grant,* Research Centers Grant, and Other Research Grant Obligations: Fiscal Years 1986-96

(Dollars in Thousands)

	Fiscal Year										
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Research Project Grants	$504,012	$576,340	$603,861	$658,388	$660,722	$688,330	$736,232	$752,978	$797,092‡	$819,674‡	$862,027‡§
Research Centers Grants	82,375	87,424	88,947	87,870	88,382	92,174	96,510	96,628	101,535	106,980	106,688
Other Research Grants†	35,669	39,946	38,999	39,524	39,841	44,387	47,656	45,654	52,576	55,974	56,692
Total	**$622,056**	**$703,710**	**$731,807**	**$785,782**	**$788,945**	**$824,891**	**$880,398**	**$895,260**	**$951,203**	**$982,628**	**$1,025,407**

* Includes P01s.

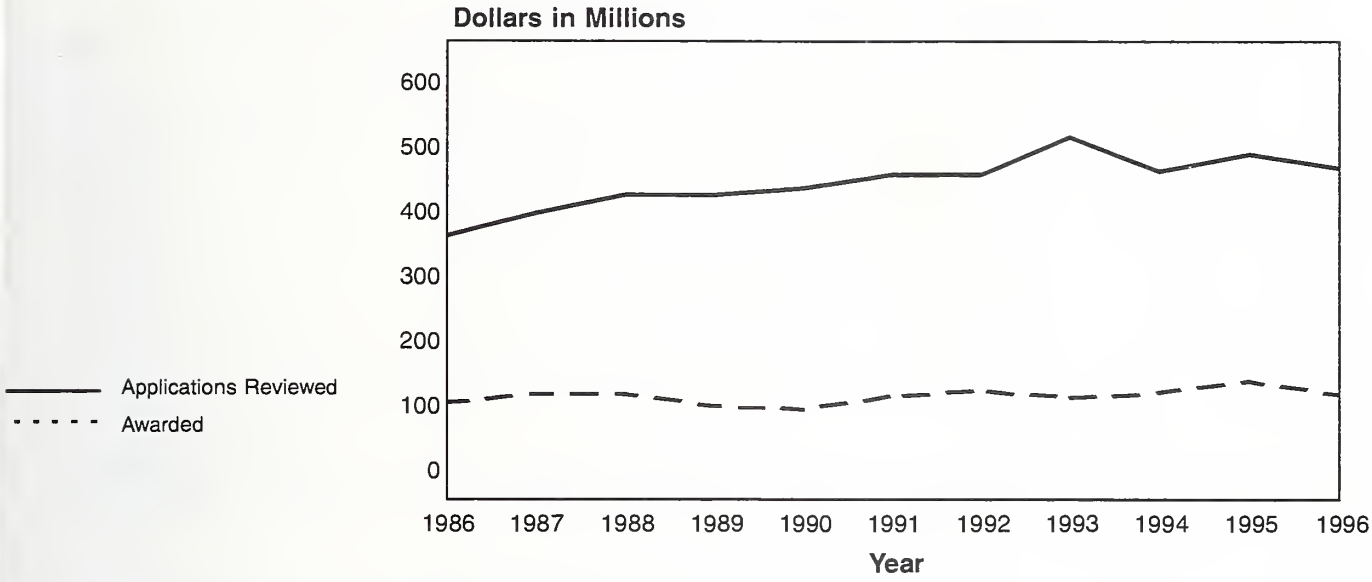
† Includes Research Career Programs; excludes General Research Support Grants.

‡ Includes R03, R41, R42, R43, and R44s.

§ Includes Program Evaluation Assessment of $4,435,000.

NHLBI Competing Research Project Grant Applications*: Fiscal Years 1986-96

Direct Cost Dollars Reviewed and Awarded



NHLBI Competing Research Project Grant Applications*: Fiscal Years 1986-96

Direct Cost Dollars Reviewed and Awarded

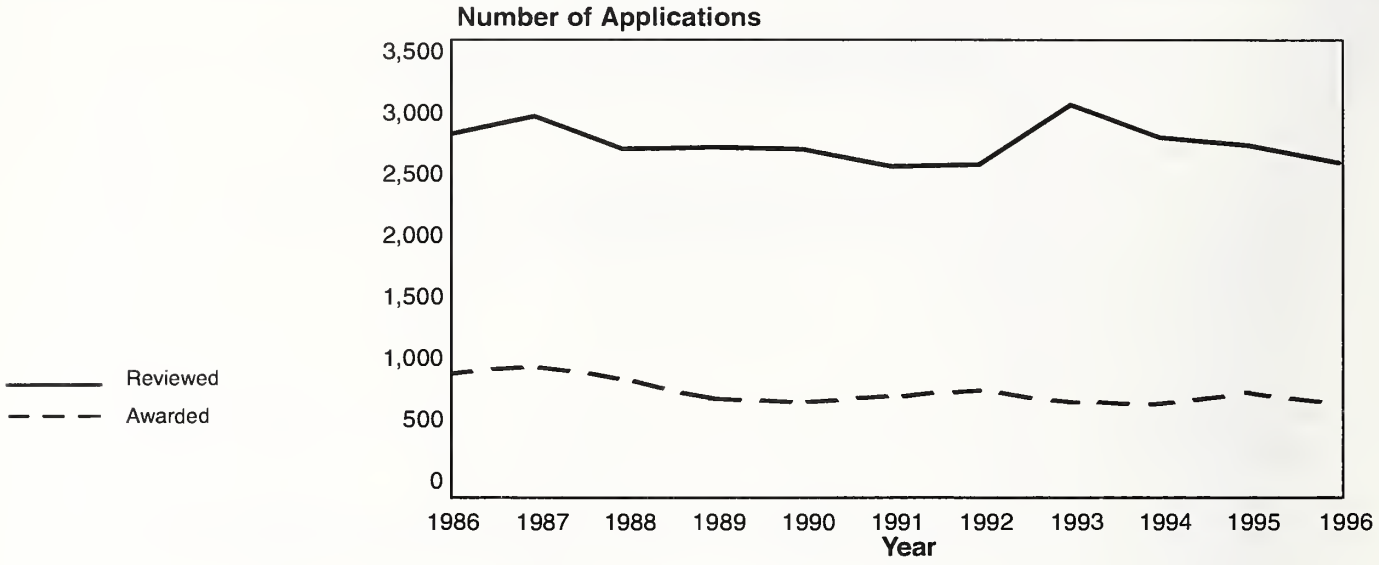
(Dollars in Millions)

	Fiscal Year										
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Applications Reviewed	$366.7	$402.1	$433.2	$432.9	$443.4	$463.7	$463.1	$521.5	$468.7	$495.7	$473.4
Awarded	109.5	122.9	122.4	104.7	99.3	119.5	129.3	117.7	124.3	142.9	122.8

* Includes R01, R23, R43, R44, P01, U01 grants; R37 grants (beginning in FY 1986); R29 grants (beginning in FY 1987); R03 grants (beginning in FY 1994); and excludes R41, R43, and R44 grants (beginning in FY 1994).

NHLBI Competing Research Project Grant Applications*: Fiscal Years 1986-96

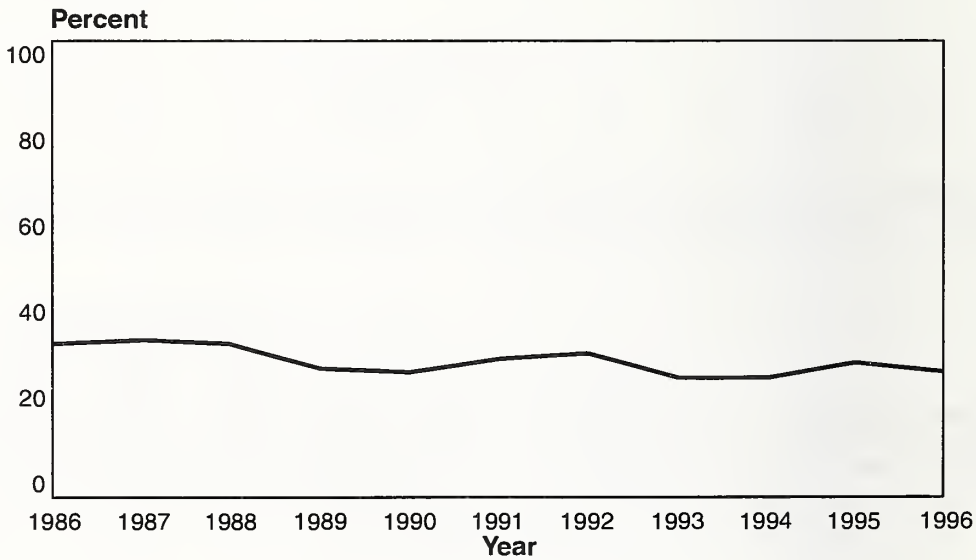
Number Reviewed and Awarded



(Number of Applications)

	Fiscal Year										
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Applications Reviewed	2,822	2,964	2,714	2,716	2,707	2,571	2,580	3,072	2,801	2,744	2,605
Awarded	886	966	851	698	675	717	759	673	655	740	652

Percent of Reviewed Applications Funded (Success Rate)

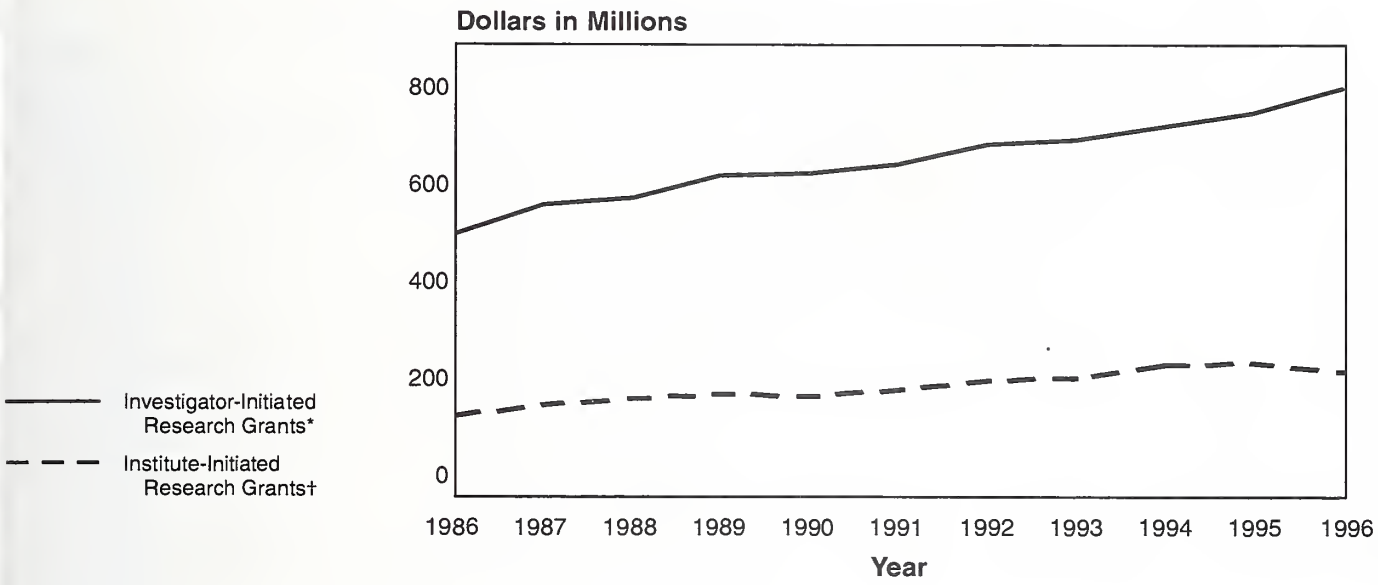


(Percent)

	Fiscal Year										
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Success Rates	31.4	32.6	31.4	25.7	24.9	27.5	29.2	21.9	23.4	27.0	25.0

* Includes R01, R23, R43, R44, P01, U01 grants; R37 grants (beginning in FY 1986); and R29 grants (beginning in FY 1987); R03 grants (beginning in FY 1994); and excludes R41, R43, and R44 grants (beginning in FY 1994).

NHLBI Investigator-Initiated and Institute-Initiated Research Grant Obligations: Fiscal Years 1986-96



NHLBI Investigator-Initiated and Institute-Initiated Research Grant Obligations: Fiscal Years 1986-96

(Dollars in Millions)

	Fiscal Year										
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Investigator-Initiated*	$501.2	$558.8	$574.6	$618.1	$625.0	$645.8	$683.9	$692.8	$724.8	$750.7	$804.1
Institute-Initiated†	120.8	144.9	157.2	167.7	164.0	179.1	196.5	202.5	226.4	231.9	216.8
Total	**$622.0**	**$703.7**	**$731.8**	**$785.8**	**$789.0**	**$824.9**	**$880.4**	**$895.3**	**$951.2**	**$982.6**	**$1,020.9‡**

* Includes R01, R23, R43, R44, P01, U01 grants; R37 grants (beginning in FY 1986); R29 grants (beginning in FY 1987); R03 grants (beginning in FY 1994); and excludes R41, R43, and R44 grants (beginning in FY 1994). Includes Research Career Programs; R55 (beginning in FY 1995).

† Including Centers Grants and Cooperative Agreement RFAs.

‡ Excludes Program Evaluation Assessment of $4,435,000.

NHLBI Research Project Grants*: Amount Funded by Type of Award, Fiscal Years 1986-96

(Dollars in Millions)

Fiscal Year	Competing				Noncompeting	Total Noncompeting and Competing
	New Competing	Renewal Competing	Competing Supplements	Total		
1986	$76.9	$76.8	$2.3	$156.0	$348.0	$504.0
1987	83.5	90.8	4.1	178.4	397.9	576.3
1988	80.2	92.2	3.2	175.6	428.2	603.8
1989	77.5	70.5	1.7	149.7	508.7	658.4
1990	68.4	72.6	1.5	142.5	518.2	660.7
1991	84.0	86.0	1.6	171.6	516.7	688.3
1992	88.5	101.2	0.5	190.2	546.0	736.2
1993	89.9	79.1	0.6	169.6	583.4	753.0
1994	99.7	79.6	1.1	180.4	599.9	780.3
1995	111.1	94.5	1.9	207.5	588.4	795.9
1996	90.5	90.4	1.2	182.1	649.9	832.0

Indirect Cost Rates of NHLBI Research Project Grants*: Fiscal Years 1986-96

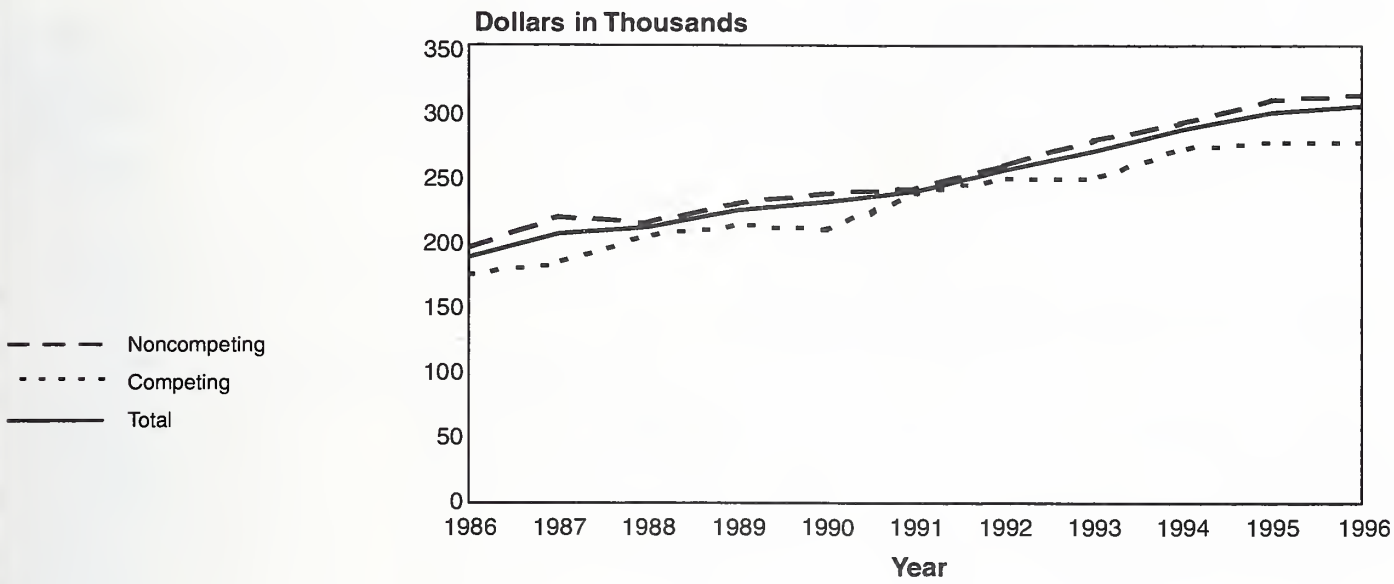
(Dollars in Thousands)

Fiscal Year	Direct Cost	Indirect Cost	Indirect Cost as a Percent of Direct Cost	Total Cost
1986	$345,728	$158,284	45.8%	$504,012
1987	394,555	181,784	46.1	576,340
1988	415,471	188,390	45.3	603,861
1989	452,557	205,831	45.5	658,388
1990	450,497	210,225	46.7	660,722
1991	470,623	217,707	46.3	688,330
1992	503,076	233,156	46.3	736,232
1993	516,022	236,956	45.9	752,978
1994	534,374	245,965	46.0	780,339
1995	543,502	252,423	46.4	795,925
1996	564,219	267,785	47.5	832,004†

* Includes R01, R23, P01 grants; R43 grants (beginning in FY 1983); R44 grants (beginning in FY 1984); U01 grants (beginning in FY 1985); R37 grants (beginning in FY 1986); R29 grants (beginning in FY 1987); R03 grants (beginning in FY 1994); and excludes $23.7 million in R41, R43, and R44 grants (beginning in FY 1994).

† Excludes Program Evaluation Assessment of $4,435,000.

NHLBI Research Project Grants*: Average Cost, Fiscal Years 1986-96



NHLBI Research Project Grants*: Average Cost, Fiscal Years 1986-96

(Dollars in Thousands)

	Fiscal Year										
	1986	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**
Noncompeting	$196.6	$221.1	$217.2	$231.5	$239.9	$243.2	$261.7	$281.0	$294.8	$312.8	$317.5
Competing	176.0	184.7	206.4	214.5	211.1	239.3	251.4	252.0	275.5	280.4	279.3
Total	**$189.8**	**$208.4**	**$214.0**	**$227.4**	**$233.1**	**$242.2**	**$259.0**	**$273.9**	**$290.1**	**$303.7**	**$308.3**

* Includes R01, R23, R43, R44, P01, U01 grants; R37 grants (beginning in FY 1986); and R29 grants (beginning in FY 1987); R03 grants (beginning in FY 1994); and excludes R41, R43, and R44 grants (beginning in FY 1994).

NHLBI Research Centers (P50 and P60) Programs

Specialized Centers of Research (P50) Program

Specialized Centers of Research (SCOR) 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, pulmonary diseases, and thrombosis. Currently, the SCOR Program focuses on 14 active areas of heart, blood vessel, lung, and blood research.

NHLBI Specialized Centers of Research (P50)

		Obligations (Dollars in Thousands)		
Areas of Concentration	Period of Operation	Prior to FY 1996*	FY 1996	Total to Date*
Arteriosclerosis	1971-	$313,696	$14,379	$328,075
Thrombosis	1971-	119,654	3,675	123,329
Chronic Diseases of the Airways	1977-	70,384	5,192	75,576
Occupational and Immunologic Lung Diseases	1977-	77,391	6,196	83,587
Lung Biology and Disease in Infants and Children†	1977-	112,565	6,669	119,234
Transfusion Medicine	1985-	28,369	3,388	31,757
Cystic Fibrosis	1988-	18,303	3,359	21,662
Cardiopulmonary Disorders During Sleep	1988-	15,584	2,904	18,488
Pediatric Cardiovascular Diseases	1993-	5,644	3,235	8,879
Acute Lung Injury	1994-	13,296	6,556	19,852
Ischemic Heart Disease in Blacks	1995-	2,187	2,287	4,474
Ischemic Heart Disease, Sudden Cardiac Death, Heart Failure	1995-	12,622	13,118	25,740
Hematopoietic Stem Cell Biology	1995-	4,549	3,231	7,780
Molecular Genetics of Hypertension	1996-	0	8,065	8,065
Pathobiology of Lung Development	1996-	0	1,430	1,430
Cellular and Molecular Mechanisms of Asthma	1996-	0	3,831	3,831
NHLBI Specialized Centers of Research (P50)		**$794,244**	**$87,515**	**$881,759**

* Excludes Transition Quarter, 1976.

† Formerly "Respiratory Disorders of Neonates and Children."

Specialized Centers of Research (P50) Program

Arteriosclerosis

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

Obligations

Fiscal Year 1996—$14,379,000

Current Active Organizations and Grant Numbers

1. University of California, San Diego, La Jolla, California —HL-14197
2. University of California, San Francisco, San Francisco, California —HL-14237
3. University of Chicago, Chicago, Illinois —HL-15062
4. Columbia University, New York, New York —HL-21006
5. Baylor College of Medicine, Houston, Texas —HL-27341
6. University of Washington, Seattle, Washington —HL-47151
7. The Johns Hopkins University, Baltimore, Maryland —HL-47212

Thrombosis

In three 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 1996—$3,675,368

Current Active Organizations and Grant Numbers

1. Mt. Sinai School of Medicine, New York, New York —HL-54469
2. University of Pennsylvania, Philadelphia, Pennsylvania —HL-54500
3. University of Oklahoma, Oklahoma City, Oklahoma —HL-54502

Chronic Diseases of the Airways

In three 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 1996—$5,192,188

Current Active Organizations and Grant Numbers

1. University of Arizona, Tucson, Arizona —HL-14136
2. Harvard University, Boston, Massachusetts —HL-19170
3. Case Western Reserve University, Cleveland, Ohio —HL-37117

Occupational and Immunologic Lung Diseases

Researchers in four 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 1996—$6,196,024

Current Active Organizations and Grant Numbers

1. National Jewish Center for Immunology and Respiratory Medicine, Denver, Colorado —HL-27353
2. University of Iowa, Iowa City, Iowa —HL-37121
3. University of Michigan, Ann Arbor, Michigan —HL-46487
4. Boston University, Boston, Massachusetts —HL-46563

Lung Biology and Disease in Infants and Children*

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

Obligations

Fiscal Year 1996—$6,669,223

Current Active Organizations and Grant Numbers

1. Vanderbilt University School of Medicine, Nashville, Tennessee —HL-14214
2. University of North Carolina, Chapel Hill, North Carolina —HL-19171
3. University of Rochester, Rochester, New York —HL-36543
4. University of Wisconsin, Madison, Wisconsin —HL-46478
5. University of Colorado, Denver, Colorado —HL-46481
6. Yale University, New Haven, Connecticut —HL-46488
7. Children's Hospital, Boston, Massachusetts —HL-46491

* Formerly "Respiratory Disorders of Neonates and Children."

Transfusion Medicine

Three Transfusion Medicine SCORs have been established to foster new approaches for improving the availability, efficacy, safety, and quality of blood and blood products for therapeutic uses.

Obligations

Fiscal Year 1996—$3,387,786

Current Active Organizations and Grant Numbers

1. New York Blood Center, New York, New York —HL-54459
2. University of California, San Francisco, San Francisco, California —HL-54476
3. University of Pennsylvania, Philadelphia, Pennsylvania —HL-54516

Cystic Fibrosis

Research in four SCORs emphasizes the exploration of basic mechanisms underlying cystic fibrosis, the elaboration of new hypotheses, and the generation of innovative strategies for approaching clinical and fundamental issues.

Obligations

Fiscal Year 1996—$3,359,184

Current Active Organizations and Grant Numbers

1. University of California, San Francisco, San Francisco, California —HL-42368
2. University of North Carolina, Chapel Hill, North Carolina —HL-42384
3. University of Iowa, Iowa City, Iowa —HL-42385
4. Case Western Reserve University, Cleveland, Ohio —HL-50160

Cardiopulmonary Disorders During Sleep

In three SCORs, basic and clinical research focuses on the pathogenesis, diagnosis, and management of cardiopulmonary disorders during sleep.

Obligations

Fiscal Year 1996—$2,904,543

Current Active Organizations and Grant Numbers

1. Case Western Reserve University, Cleveland, Ohio —HL-42215
2. University of Pennsylvania, Philadelphia, Pennsylvania —HL-42236
3. University of Wisconsin, Madison, Wisconsin —HL-42242

Pediatric Cardiovascular Diseases

Investigators will apply innovative approaches to elucidate the etiology and pathophysiology of pediatric cardiovascular diseases (CVD) and will translate their findings to improve diagnosis, treatment, and prevention of CVD in children.

Obligations

Fiscal Year 1996—$3,234,999

Current Active Organizations and Grant Numbers

1. University of Rochester, Rochester, New York —HL-51498
2. Children's Hospital of Philadelphia, Philadelphia, Pennsylvania —HL-51533
3. University of Iowa, Iowa City, Iowa —HL-42266

Acute Lung Injury

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

Obligations

Fiscal Year 1996—$6,556,101

Current Active Organizations and Grant Numbers

1. Vanderbilt University, Nashville, Tennessee —HL-19153
2. University of California, San Diego, La Jolla, California —HL-23584
3. University of Washington, Seattle, Washington —HL-30542
4. University of Colorado Health Sciences Center, Denver, Colorado —HL-40784
5. University of Minnesota, Minneapolis, Minnesota —HL-50152
6. University of Utah, Salt Lake City, Utah —HL-50153

Ischemic Heart Disease in Blacks

In two SCORs, investigators are fostering an interdisciplinary study of issues surrounding the expression of heart disease in blacks.

Obligations

Fiscal Year 1996—$2,286,968

Current Active Organizations and Grant Numbers

1. University of Texas Southwest Medical Center, Dallas, Texas —HL-55988
2. Boston University, Boston, Massachusetts —HL-55993

Ischemic Heart Disease, Sudden Cardiac Death, Heart Failure

In 10 SCORs, investigators are studying creative, interdisciplinary approaches to elucidation of the etiology and pathophysiology of these diseases at the molecular, cellular, and tissue levels and the translation of research findings into improved diagnosis, treatment, and prevention.

Obligations

Fiscal Year 1996—$13,117,962

Current Active Organizations and Grant Numbers

1. The Johns Hopkins University, Baltimore, Maryland —HL-52307
2. The Johns Hopkins University, Baltimore, Maryland —HL-52315
3. University of Cincinnati, Cincinnati, Ohio —HL-52318
4. University of California, Los Angeles, California —HL-52319
5. Brigham and Women's Hospital, Boston, Massachusetts —HL-52320
6. Indiana University-Purdue University of Indiana, Indianapolis, Indiana —HL-52323
7. University of Utah, Salt Lake City, Utah —HL-52338
8. University of California, San Diego, California —HL-53773
9. Baylor College of Medicine, Houston, Texas —HL-54313
10. Duke University, Durham, North Carolina —HL-54314

Hematopoietic Stem Cell Biology

In three SCORs, researchers will advance our knowledge of basic stem cell biology in areas of stem cell isolation, quantitation by *in vivo* assay, *in vitro* and *in vivo* growth and replication, gene insertion, and engraftment.

Obligations

Fiscal Year 1996—$3,231,000

Current Active Organizations and Grant Numbers

1. Children's Hospital, Boston, Massachusetts —HL-54785
2. Children's Hospital, Los Angeles, California —HL-54850
3. Fred Hutchinson Cancer Research Center, Seattle, Washington —HL-54881

Molecular Genetics of Hypertension

The goals of six SCOR projects are to study the molecular genetics of hypertension, to provide understanding of the etiology and pathogenesis of hypertension, and to apply new knowledge for the improved diagnosis and management of the disease.

Obligations

Fiscal Year 1996—$8,065,000

Current Active Organizations and Grant Numbers

1. Medical College of Wisconsin, Milwaukee, Wisconsin —HL-54998
2. Brigham and Women's Hospital, Boston, Massachusetts —HL-55000
3. Boston University Medical Center, Boston, Massachusetts —HL-55001
4. University of Southern California, Los Angeles, California —HL-55005
5. University of Iowa Hospitals, Iowa City, Iowa —HL-55006
6. Yale University School of Medicine, New Haven, Connecticut —HL-55007

Pathobiology of Lung Development

The objective of this program is to foster multidisciplinary research enabling basic science findings to be more rapidly applied to clinical problems related to lung development. The program will focus on identification of the molecular variables involved in lung development and assessment of the impact of injury during critical periods.

Obligations

Fiscal Year 1996—$1,429,288

Current Active Organization and Grant Number

1. Children's Hospital of Philadelphia, Philadelphia, Pennsylvania —HL-56401

Cellular and Molecular Mechanisms of Asthma

The objective of this program is to apply critical science and technology to increase understanding of cellular and molecular mechanisms of asthma, including those mechanisms underlying the biological impact of environmental factors.

Obligations

Fiscal Year 1996—$3,830,353

Current Active Organizations and Grant Numbers

1. Brigham and Women's Hospital, Boston, Massachusetts —HL-56383
2. University of Chicago, Chicago, Illinois —HL-56399
3. Washington University, St. Louis, Missouri —HL-56419

Comprehensive Sickle Cell Centers (P60) Program

The Comprehensive Sickle Cell Centers (CSCC) were instituted in Fiscal Year 1972 to bridge the gap between research and service by combining basic and clinical research, clinical trials and application, training, and community service projects into one program.

Obligations

Fiscal Year 1996—$19,172,773

Current Active Organizations and Grant Numbers

1. Boston City Hospital, Boston, Massachusetts —HL-15157
2. University of California, San Francisco, San Francisco, California —HL-20985
3. College of Physicians and Surgeons of Columbia University, New York, New York —HL-28381
4. Duke University, Durham, North Carolina —HL-28391
5. Children's Hospital of Philadelphia, Philadelphia, Pennsylvania —HL-38632
6. University of South Alabama, Mobile, Alabama —HL-38639
7. Montefiore Medical Center, New York, New York —HL-38655
8. Meharry Medical College, Nashville, Tennessee —HL-38737
9. Emory University, Atlanta, Georgia —HL-48482
10. University of Southern California, Los Angeles, California —HL-48484

NHLBI Research, Demonstration, and Education Program (R18)

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 already have been found to be efficacious in other studies.

Program	Obligations Prior to FY 1996	FY 1996 Obligations	Total Obligations to Date*
Heart and Vascular Diseases			
Institute-Initiated (RFA)	$13,750,908	$ 0	$13,750,908
Investigator-Initiated	15,302,493	789,882	16,092,375
Subtotal	29,053,401	789,882	29,843,283
Lung Diseases			
Institute-Initiated (RFA)	4,615,615	0	4,615,615
Investigator-Initiated	2,886,367	0	2,886,367
Subtotal	7,501,982	0	7,501,982
Blood Diseases and Resources			
Institute-Initiated (RFA)	503,411	0	503,411
Investigator-Initiated	11,819,865	0	11,819,865
Subtotal	12,323,276	0	12,323,276
Subtotal, NHLBI			
Institute-Initiated (RFA)	18,869,934	0	18,869,934
Investigator-Initiated	30,008,725	789,882	30,798,607
Total, NHLBI	**$48,878,659**	**$789,882**	**$49,668,541**

* September 30, 1996.

Obligations

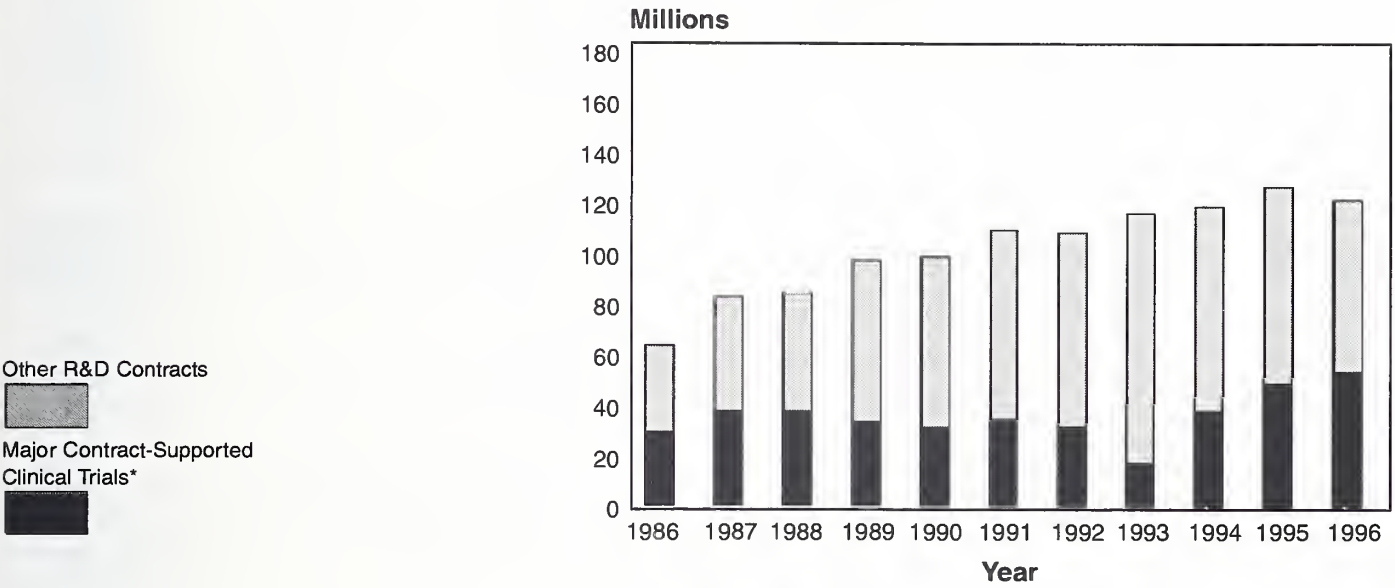
Fiscal Year 1996—$789,882

Current Active Organization and Grant Number

1. Baylor College of Medicine, Houston, Texas —HL-47052

10. Research and Development Contracts

NHLBI Research and Development Contract Obligations*: Fiscal Years 1986-96



* For detailed data on contract-supported clinical trials, see Chapter 11.

NHLBI Total Research and Development Contract Obligations: Fiscal Years 1986-96

(Dollars in Thousands)

	Fiscal Year										
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Heart	$48,430	$53,389	$61,342	$63,944	$62,177	$61,070	$57,714	$66,717	$67,173	$70,178	$80,373
Lung	6,201	12,183	6,122	9,169	10,338	16,910	16,977	18,552	21,957	15,414	21,032
Blood	8,384	16,693	16,408	23,607	25,862	30,725	32,980	32,280	29,122	40,324	19,522
Total	**$63,015**	**$82,265**	**$83,872**	**$96,720**	**$98,377**	**$108,705**	**$107,671**	**$117,549**	**$118,252**	**$125,916**	**$120,927***

* Includes Program Evaluation Assessment of $4,250,000.

Major NHLBI Research and Development Contracts by Program*: Fiscal Year 1996

	Total Obligations Prior to FY 1996	Total FY 1996 Obligations	Total Obligations to Date
Heart and Vascular Diseases			
Circulatory Assist/Artificial Heart Program	$74,150,125	$9,227,167	$83,377,292
Coronary Artery Risk Development in Young Adults (CARDIA)	39,020,882	3,486,000	42,506,882
Atherosclerosis Risk in Communities (ARIC)	81,011,645	6,033,840	87,045,485
Cardiovascular Health Study (CHS)	45,137,436	5,489,000	50,626,436
Framingham Study	20,076,997	2,334,000	22,410,997
Honolulu Heart Program (HHP)	11,078,404	631,850	11,710,254
Innovative Ventricular Assist System (IVAS)	5,408,000	8,501,000	13,909,000
Lung Diseases			
Pediatric Lung and Heart Complications of HIV Infection	33,035,383	4,033,237	37,068,620
Registry of Patients With Severe Congenital Deficiency of Alpha$_1$-Antitrypsin	2,648,730	268,931	2,917,661
Interventions To Improve Asthma Management and Prevention at School	1,174,000	1,773,325	2,947,325
Clinical Center for a Case Controlled Etiologic Study of Sarcoidosis (ACCESS)	855,000	3,145,013	4,000,013
Blood Diseases and Resources			
Retrovirus Epidemiology Donor Study (REDS)	37,642,027	1,210,151	38,852,178
Refinement of New Assays for Direct Detection of Viral Nucleic Acids in Donated Organs	—	5,102,000	5,102,000

* Excludes clinical trials included in Chapter 11. Selected programs are described on the pages that follow.

Circulatory Assist/Artificial Heart Program: Heart and Vascular Diseases Program

This program focuses on electrical-mechanical, fully implantable circulatory support systems: ventricular assist devices and the total artificial heart. The basic research underlying this program is supported by research grants. Device development and clinical testing of devices are supported by contract.

Obligations

Funding History:
Fiscal Year 1996—$9,227,167
Fiscal Years 1984-95—$74,150,125
Total Funding to Date—$83,377,292

Current Active Organizations and Contract Numbers

Biventricular Assist and Replacement Devices, Initiated in Fiscal Year 1988:

1. Cleveland Clinic Foundation, Cleveland, Ohio —HV-38128
2. Pennsylvania State University, Hershey, Pennsylvania —HV-38130

Coronary Artery Risk Development in Young Adults (CARDIA): Heart and Vascular Diseases Program, Initiated in Fiscal Year 1984

CARDIA is a prospective epidemiologic investigation of the precursors and determinants of coronary heart disease (CHD) risk factors and their evolution over time in a biracial cohort of young men and women (ages 18 to 30 years). The principal objectives of the study are to measure the prevalence and distribution, in this population, of risk factors related to the development of CHD in older cohorts and to identify lifestyles that influence changes in risk factors.

Obligations

Funding History:
Fiscal Year 1996—$3,486,000
Fiscal Years 1984-95—$39,020,882
Total Funding to Date—$42,506,882

Coronary Artery Risk Development in Young Adults (CARDIA): (continued)

Current Active Organizations and Contract Numbers

1. University of Alabama, Birmingham, Alabama —HC-48047
2. University of Minnesota, Minneapolis, Minnesota —HC-48048
3. Northwestern University, Evanston, Illinois —HC-48049
4. Kaiser Foundation Research Institute, Oakland, California —HC-48050
5. University of Alabama, Birmingham, Alabama —HC-95095
6. University of California, Irvine, California —HC-45134

Atherosclerosis Risk in Communities (ARIC): Heart and Vascular Diseases Program, Initiated in Fiscal Year 1985

ARIC is a large-scale, long-term program that is measuring associations of established and suspected CHD risk factors with both atherosclerosis and new CHD events in men and women from four diverse communities. The project has two components: community surveillance and repeated examinations of a representative cohort of men and women in each community.

Obligations

Funding History:
Fiscal Year 1996—$6,033,840
Fiscal Years 1985-95—$81,011,645
Total Funding to Date—$87,045,485

Current Active Organizations and Contract Numbers

1. University of North Carolina, Chapel Hill, North Carolina —HC-55015
2. Baylor College of Medicine, Houston, Texas —HC-55016
3. University of North Carolina, Chapel Hill, North Carolina —HC-55018
4. University of Minnesota, Minneapolis, Minnesota —HC-55019
5. The Johns Hopkins University, Baltimore, Maryland —HC-55020
6. Mississippi Medical Center, Jackson, Mississippi —HC-55021
7. University of Texas Health Science Center, Houston, Texas —HC-55022
8. University of Wisconsin, Madison, Wisconsin —HC-35125

Cardiovascular Health Study (CHS): Heart and Vascular Diseases Program, Initiated in Fiscal Year 1988*

The major objective of this research is to investigate risk factors for CHD and stroke in the elderly. The study will determine whether the presence or progression of subclinical disease, detected noninvasively, are better predictors of clinical disease than traditional risk factors. In addition, characteristics of subgroups at low risk for developing CVD will be identified because preventive measures may be unnecessary for such groups.

Obligations

Funding History:
Fiscal Year 1996—$5,489,000
Fiscal Years 1988-95—$45,137,436
Total Funding to Date—$50,626,436

Current Active Organizations and Contract Numbers

1. University of Washington, Seattle, Washington —HC-85079
2. Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, North Carolina —HC-85080
3. The Johns Hopkins University, Baltimore, Maryland —HC-85081
4. University of California, Davis, California —HC-85083
5. University of Vermont, Burlington, Vermont —HC-85086
6. The Johns Hopkins University, Baltimore, Maryland —HC-15103
7. Geisinger Medical Center, Danville, Pennsylvania —HC-45133
8. Georgetown University, Washington, D.C. —HC-35129

* Formerly called "Coronary Heart Disease and Stroke in the Elderly Program."

Framingham Study: Heart and Vascular Diseases Program

The Framingham Study is a longitudinal investigation of constitutional, environmental, and genetic factors influencing the development of CVD in men and women free of those conditions at the outset. In addition to the cohort of 5,209 men and women originally enrolled in the study, a second sample of nearly equal size consisting of offspring (and their spouses) was established in the 1970's. The offspring cohort permits the examination of numerous hypotheses about the familial clustering of CVD and CVD risk factors.

Obligations

Funding History:
Fiscal Year 1996—$2,334,000
Fiscal Years 1983-95—$20,076,997
Total Funding to Date—$22,410,977

Current Active Organization and Contract Number

1. Boston University Medical Center, Boston, Massachusetts —HC-38038

Honolulu Heart Program: Heart and Vascular Diseases Program

The National Institute on Aging, in collaboration with the NHLBI, completed a fifth examination of the surviving cohort in April 1996, collecting blood pressures and resting ECGs as well as measures of cognitive function and the recording of morbidity, mortality, and the incidence of senile dementia. The NHLBI contract supporting this program terminated at the end of February 1996.

Obligations

Funding History:
Fiscal Year 1996—$631,850
Fiscal Years 1980-95—$11,078,404
Total Funding to Date—$11,710,254

Current Active Organization and Contract Number

1. Kuakini Medical Center, Honolulu, Hawaii —HC-05102

Innovative Ventricular Assist System (IVAS): Heart and Vascular Diseases Program, Initiated in Fiscal Year 1995

The major objective of this research is to encourage the development of totally implantable ventricular assist systems that are designed to achieve at least a 5-year lifetime with 90 percent reliability.

Obligations

Funding History:
Fiscal Year 1996—$8,501,000
Fiscal Year 1995—$5,408,000
Total Funding to Date—$13,909,000

Current Active Organizations and Contract Numbers

1. Abiomed, Inc., Danvers, Massachusetts —HV-58154
2. Nimbus, Inc., Rancho Cordova, California —HV-58155
3. Pennsylvania State University, University Park, Pennsylvania —HV-58156
4. Transicoil, Inc., Trooper, Pennsylvania —HV-58157
5. Whalen Biomedical, Inc., Cambridge, Massachusetts —HV-58158
6. Cleveland Clinic Foundation, Cleveland, Ohio —HV-58159

Pediatric Lung and Heart Complications of HIV Infection: Lung Diseases Program, Initiated in Fiscal Year 1989

This 6-year, multicenter natural history study is designed to identify and follow the course of lung and cardiovascular diseases that occur in pediatric patients with all stages of vertically transmitted HIV infection.

Obligations

Funding History:
Fiscal Year 1996—$4,033,237
Fiscal Years 1989-95—$33,035,383
Total Funding to Date—$37,068,620

Current Active Organizations and Contract Numbers

1. Cleveland Clinic Foundation, Cleveland, Ohio —HR-96037
2. University of California, Los Angeles, Los Angeles, California —HR-96038
3. Baylor College of Medicine, Houston, Texas —HR-96040
4. Mt. Sinai School of Medicine, New York, New York —HR-96042
5. Presbyterian Hospital in the City of New York, New York, New York —HR-96043

Registry of Patients With Severe Congenital Deficiency of Alpha$_1$-Antitrypsin: Lung Diseases Program, Initiated in Fiscal Year 1988

The purpose of the patient registry is to characterize the clinical and laboratory course of severe congenital deficiency of alpha$_1$-antitrypsin, whether or not the patient is undergoing long-term augmentation therapy. Thirty-seven volunteer clinical centers enrolled 1,129 patients into the registry.

Obligations

Funding History:
Fiscal Year 1996—$268,931
Fiscal Years 1988-95—$2,648,730
Total Funding to Date—$2,917,661

Current Active Organization and Contract Number

1. Cleveland Clinic Foundation, Cleveland, Ohio —HR-86036

Interventions To Improve Asthma Management and Prevention at School: Lung Diseases Program, Initiated in Fiscal Year 1995

This is a program to develop and evaluate innovative programs to ensure optimal asthma management and prevention at school. Program objectives include identifying cost-effective measures to increase identification and appropriate referral of children with uncontrolled asthma; reducing children's exposure to known allergens and irritants; increasing participation of students with asthma in all school activities; improving support to the students for following their asthma management plans; and improving communication between the school and home.

Obligations

Funding History:
Fiscal Year 1996—$1,773,325
Fiscal Year 1995—$1,174,000
Total Funding to Date—$2,947,325

Current Active Organizations and Contract Numbers

1. University of Alabama, Birmingham, Alabama —HR-56077
2. University of Michigan at Ann Arbor, Ann Arbor, Michigan —HR-56078
3. University of Texas Health Sciences Center at Houston, Houston, Texas —HR-56079

Clinical Center for a Case Controlled Etiologic Study of Sarcoidosis (ACCESS): Lung Diseases Program, Initiated in Fiscal Year 1995

The major objectives of this program are to support a multicenter case-control study of potential etiologic factors for sarcoidosis, a systemic granulomatous disease that usually produces disease in the lung. The study will assess the role of environmental and familial factors in the etiology of the disease. The protocol will include comprehensive clinical characterization and examination of markers of immune responsiveness as well as banking of blood, bronchoalveolar lavage fluid, and tissue for further studies.

Obligations

Funding History:
Fiscal Year 1996—$3,145,013
Fiscal Years 1995—$855,000
Total Funding to Date—$4,000,013

Current Active Organizations and Contract Numbers

1. The Johns Hopkins University, Baltimore, Maryland —HR-56065
2. National Jewish Center for Immunology and Respiratory Medicine, Denver, Colorado —HR-56066
3. Case Western Reserve University, Henry Ford Hospital, Detroit, Michigan —HR-56067
4. Medical University of South Carolina, Charleston, South Carolina —HR-56068
5. University of Cincinnati Medical Center, Cincinnati, Ohio —HR-56069
6. University of Iowa, Iowa City, Iowa —HR-56070
7. Mt. Sinai School of Medicine, New York City, New York —HR-56071
8. University of Pennsylvania, Philadelphia, Pennsylvania —HR-56072
9. Georgetown University, Washington, D.C. —HR-56073
10. Beth Israel Hospital, Boston, Massachusetts —HR-56074
11. Clinical Trials and Surveys Corporation, Baltimore, Maryland —HR-56075

Retrovirus Epidemiology Donor Study (REDS): Blood Diseases and Resources Program, Initiated in Fiscal Year 1989

This program was established to accurately determine the prevalence of retrovirus-positivity in blood donors. Researchers are evaluating the demographic, risk factor, and behavioral characteristics of blood donors with high risks who continue to donate. A blood specimen repository is also being established as a mechanism for evaluating new tests for known viruses and as a sentinel for as-yet-unrecognized viruses.

Obligations

Funding History:
Fiscal Year 1996—$1,210,151
Fiscal Years 1989-95—$37,642,027
Total Funding to Date—$38,852,178

Current Active Organizations and Contract Numbers

1. University of California, San Francisco, San Francisco, California —HB-47114
2. Oklahoma Blood Institute, Oklahoma City, Oklahoma —HB-97078
3. American Red Cross, Greater Chesapeake and Potomac Region, Baltimore, Maryland —HB-97079
4. American Red Cross, Southern California, Los Angeles, California —HB-97080
5. American Red Cross, Southeastern Michigan Region, Detroit, Michigan —HB-97081

Refinement of New Assays for Direct Detection of Viral Nucleic Acids in Donated Organs: Blood Diseases and Resources Program, Initiated in Fiscal Year 1996

This program will refine, for use in clinical laboratories, one or more nucleic acid-based techniques for the direct detection of blood-borne viruses (HIV and hepatitis C are the highest priority) in donors of blood for transfusion and organs for transplantation. The purpose of these new techniques is to reduce the antibody-negative window between infectivity and detection to the shortest possible time and, when possible, to obviate the need for an indirect antibody test.

Obligations

Funding History:
Fiscal Year 1996—$5,102,000
Total Funding to Date—$5,102,000

Current Active Organizations and Contract Numbers

1. Gen-Probe, Inc., San Diego, California —HB-67130
2. Johnson & Johnson Clinical Diagnostics, Inc., Rochester, New York —HB-67131

11. Clinical Trials

A clinical trial is defined as a scientific research study undertaken with human subjects to evaluate prospectively the diagnostic, prophylactic, or therapeutic effect of a drug, device, regimen, or procedure used or intended ultimately for use in the practice of medicine or the prevention of disease. A clinical trial is planned and conducted prospectively and includes a concurrent control group or other appropriate comparison group.

NHLBI Investigator-Initiated Clinical Trials: Fiscal Years 1986-96

Research Grants and Cooperative Agreements (Dollars in Thousands)

	Fiscal Year										
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Heart and Vascular Diseases											
Program on Surgical Control of Hyperlipidemias (POSCH)	$2,998	$3,405	$3,175	$2,394	$1,902	$1,584	$ —	$485	$500	$538	$566
Prevention of Hypertension: Randomized Trial	271	—	—	—	—	—	—	—	—	—	—
Exercise Training and Plasma Lipoproteins in Man	1,025	1,203	808	621	—	—	—	—	—	—	—
Platelet Drug Trial in Coronary Disease Progression	301	293	—	—	—	—	—	—	—	—	—
Systolic Hypertension in the Elderly Program (SHEP) Pilot Study	85	—	—	—	—	—	—	—	—	—	—
Hypertension Prevention Trial	886	908	—	—	—	—	—	—	—	—	—
Physicians' Health Study	590	614	613	655	645	555	—	—	—	—	—
Non-Surgical Reperfusion of Coronary Arteries	300	—	—	—	—	—	—	—	—	—	—
Effect of Increased Dietary Potassium on Blood Pressure	342	162	—	—	—	—	—	—	—	—	—
Cardiovascular System in Obesity	278	—	—	—	—	—	—	—	—	—	—
Intravenous Streptokinase in Acute Myocardial Infarction	197	—	—	—	—	—	—	—	—	—	—
Stanford Coronary Risk Intervention Program (SCRIP)	899	1,102	1,405	1,485	1,410	354	382	—	—	—	—
Potassium and Sodium to Control Blood Pressure	445	294	—	—	—	—	—	—	—	—	—
Platelet Inhibitor Drug Trial in Coronary Angioplasty	316	281	—	—	—	—	—	—	—	—	—
Continuation of Trial of Antihypertensive Intervention Management (COTAIM)	2,192	1,353	2,208	1,914	1,780	614	—	—	—	—	—
Randomized Trial of Diets in Obese Hypertensives	444	223	290	—	—	—	—	—	—	—	—
Polyunsaturates and KCl to Control Mild Hypertension	—	275	—	266	272	328	—	—	—	—	—
Boston Area Anticoagulation Trial for Atrial Fibrillation	291	329	522	495	479	370	—	—	—	—	—
Electrophysiologic Study Versus Electrocardiographic Monitoring (ESVEM)	1,371	1,795	—	959	794	904	740	—	—	—	—
Prevention of Coronary Aneurysm in Kawasaki Syndrome	738	492	1,654	822	—	—	—	—	—	—	—
Sodium-Potassium Blood Pressure Trial in Children	453	461	586	563	206	205	—	—	—	—	—
Treatment of Mild Hypertension Study (TOMHS)	2,661	2,770	2,499	—	1,931	962	—	—	—	—	—
Optimal Exercise Regimens for Persons at Increased Risk	587	649	528	520	—	—	—	—	—	—	—
Myocarditis Treatment Trial	1,660	1,718	—	1,591	—	247	—	—	—	—	—

(continued)

NHLBI Investigator-Initiated Clinical Trials: Fiscal Years 1986-96 (continued)

Research Grants and Cooperative Agreements (Dollars in Thousands)

	Fiscal Year										
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Heart and Vascular Diseases (continued)											
Diuretics, Hypertension and Arrhythmias Clinical Trial	385	438	341	41	127	—	—	—	—	—	—
Recurrent Carotid Stenosis	147	172	182	186	120	—	—	—	—	—	—
Coronary Artery Surgery Study Follow-up	—	663	532	—	—	644	670	—	—	—	—
Training Levels Comparison Trial	—	289	413	395	339	245	—	—	—	—	—
Controlled Trial to Reverse Coronary Atherosclerosis	—	441	387	438	459	180	—	—	—	—	—
Cardiac Arrest in Seattle: Conventional Versus Amiodarone Drug Evaluation (CASCADE)	—	625	601	627	664	668	—	—	—	—	—
Emory Angioplasty Versus Surgery Trial (EAST)	—	942	1,553	1,430	1,877	1,951	—	277	288	296	296
Asymptomatic Carotid Artery Plaque Study (ACAPS)	—	—	1,164	1,170	843	901	1,255	—	—	—	—
Myocardial Infarction Triage and Intervention Project (MITI)	—	—	730	643	624	539	—	—	—	—	—
Infant Heart Surgery: Central Nervous System Sequelae of Circulatory Arrest	—	—	—	588	623	720	770	756	516	598	699
Lifestyle Heart Trial	—	—	—	515	530	604	524	—	—	—	—
Thrombolysis in Myocardial Ischemia Trial (TIMI III)	—	—	—	4,029	1,957	4,011	636	—	—	—	—
Do Fish Oils Prevent Restenosis Post Coronary Angioplasty?*	—	—	—	1,069	1,352	1,452	750	—	—	—	—
Prevention of Early Readmission in Elderly Congestive Heart Failure Patients	—	—	—	—	90	106	108	112	77	—	—
MRFIT Follow-up and Analysis	—	—	—	—	350	358	387	402	418	—	—
Multicenter Unsustained Tachycardia Trial (MUSTT)*	—	—	—	—	—	2,029	2,072	2,092	2,095	1,958	504
Trial of Vitamin E and Aspirin in Nurses	—	—	—	—	—	2,990	1,170	1,393	1,488	1,426	1,434
Diet and Exercise for Elevated Risk (DEER)	—	—	—	—	—	717	775	805	703	—	—
Clinical Trial—Cardiovascular Risk Factors and the Menopause	—	—	—	—	—	—	539	610	601	451	478
Sodium Sensitivity in African Americans	—	—	—	—	—	—	686	492	97	249	—
Montreal Heart Attack Readjustment Trial (M-HART)	—	—	—	—	—	—	271	298	340	—	—
Stress Reduction in Elderly Blacks With Hypertension	—	—	—	—	—	—	296	321	338	321	—
Trial of Nonpharmacologic Intervention in the Elderly (TONE)	—	—	—	—	—	—	749	1,038	796	729	—
CABG Patch Trial*	—	—	—	—	—	—	—	3,362	3,117	1,344	988
Women's Antioxidant and Cardiovascular Study (WACS)	—	—	—	—	—	—	—	586	612	620	643
Oral Calcium in Pregnant Women With Hypertension	—	—	—	—	—	—	—	280	290	306	320
Stress Reduction and Hypertensive Heart Disease in Blacks	—	—	—	—	—	—	—	—	219	330	403
Enalapril After Anthracycline Cardiotoxicity		—	—	—	—	—	—	—	587	647	707
Stress and Anger Management for Blacks With Hypertension	—	—	—	—	—	—	—	—	221	232	241
Estrogen Replacement and Atherosclerosis (ERA) Trial	—	—	—	—	—	—	—	—	1,123	260	1,213

NHLBI Investigator-Initiated Clinical Trials: Fiscal Years 1986-96 (continued)

Research Grants and Cooperative Agreements (Dollars in Thousands)

	Fiscal Year										
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Heart and Vascular Diseases (continued)											
Early Revascularization for Cardiogenic Shock	—	—	—	—	—	—	—	—	1,070	1,022	1,008
Does Atherosclerosis Regress With Therapy for Low HDLC?	—	—	—	—	—	—	—	—	484	480	427
Influence of Cardiopulmonary Bypass (CPB) Temperature on CABG Morbidity	—	—	—	—	—	—	—	—	118	107	118
Women's Estrogen/Progestin Lipid-Lowering Hormone Atherosclerosis Regression Trial (WELL-HART)	—	—	—	—	—	—	—	—	—	798	508
Mode Selection Trial in Sinus Node Dysfunction (MOST)*	—	—	—	—	—	—	—	—	—	2,163	1,857
Antioxidants and Prevention of Early Atherosclerosis*	—	—	—	—	—	—	—	—	—	793	240
Postmenopausal Hormone Therapy in Unstable Angina	—	—	—	—	—	—	—	—	—	253	258
Postmenopausal Hormone Replacement Therapy After CABG	—	—	—	—	—	—	—	—	—	—	476
Subtotal, Heart and Vascular Diseases	19,862	21,897	20,191	23,416	19,374	24,238	12,780	13,309	16,098	15,921	13,384
Lung Diseases											
Human Surfactant Treatment of Respiratory Distress Syndrome	229	234	242	270	—	—	—	—	—	—	—
Trial of Inspiratory Muscle Rest and Exercise in Chronic Obstructive Lung Disease	533	377	159	34	—	—	—	—	—	—	—
Extracorporeal Carbon Dioxide Removal for Adult Respiratory Distress Syndrome	—	435	359	237	—	—	—	—	—	—	—
Emphysema: Physiologic Effects of Nutritional Support	—	—	—	—	215	224	230	246	155	—	—
Cardiopulmonary Effects of Ibuprofen in Human Sepsis*	—	—	—	—	799	725	792	886	683	—	—
Inhaled Beclomethasone to Prevent Chronic Lung Disease*	—	—	—	—	—	—	—	583	690	738	551
Lung Health Study II*	—	—	—	—	—	—	—	594	3,307	4,434	3,183
Subtotal, Lung Diseases	762	1,046	760	541	1,014	949	1,022	2,309	4,835	5,172	3,734
Blood Diseases and Resources											
Erythropoietin for Anemia Due to Zidovudine in Human Immunodeficiency Virus Infection	—	—	240	251	229	—	—	—	—	—	—
Multicenter Study of Hydroxyurea in Sickle Cell Anemia, Phase II*	—	—	—	—	—	1,999	3,139	3,221	3,271	1,238	—
Chelation Therapy of Iron Overload With Pyridoxal Isonicotinoyl Hydrazone (PIH)	—	—	—	202	203	211	220	218	—	—	—
Trial to Reduce Alloimmunization to Platelets (TRAP), Extension	—	—	—	—	—	—	—	—	2,510	1,246	263
Stroke Prevention in Sickle Cell Anemia (STOP)*	—	—	—	—	—	—	—	—	2,751	3,257	2,435
Pediatric Hydroxyurea in Sickle Cell Anemia (PED HUG)	—	—	—	—	—	—	—	—	146	250	260
Subtotal, Blood Diseases and Resources	—	—	240	453	432	2,210	3,359	3,439	8,678	5,991	2,958
Total, NHLBI	**$20,624**	**$22,943**	**$21,191**	**$24,410**	**$20,820**	**$27,397**	**$17,161**	**$19,057**	**$29,611**	**$27,084**	**$20,076**

* Indicates paid by U01.

NHLBI Investigator-Initiated Clinical Trials, Fiscal Year 1996: Summary by Program

	Total Obligations Prior to FY 1996	Total FY 1996 Obligations	Total Obligations to Date
Heart and Vascular Diseases			
Program on Surgical Control of Hyperlipidemias (POSCH)	$51,979,694	$586,110	$52,545,804
Emory Angioplasty Surgery Trial (EAST)	8,615,366	296,234	8,911,600
Infant Heart Surgery: Central Nervous System Sequelae of Circulatory Arrest	4,569,648	699,376	5,269,024
Multicenter Unsustained Tachycardia Trial (MUSTT)	10,247,164	503,501	10,750,665
Trial of Vitamin E and Aspirin in Women	8,467,445	1,434,000	9,901,445
Cardiovascular Risk Factors and the Menopause	2,200,688	477,831	2,678,519
Sodium Sensitivity in African Americans	1,524,033	0	1,524,033
Stress Reduction in Elderly Blacks With Hypertension	1,275,129	0	1,275,129
Trial of Nonpharmacologic Intervention in the Elderly (TONE)	3,311,307	0	3,311,307
CABG Patch Trial*	7,823,349	987,880	8,811,229
Women's Antioxidant and Cardiovascular Study (WACS)	1,818,160	642,746	2,460,906
Oral Calcium in Pregnant Women With Hypertension	875,711	319,643	1,195,354
Stress Reduction and Hypertensive Heart Disease in Blacks	548,670	403,195	951,865
Enalapril After Anthracycline Cardiotoxicity	1,233,821	707,249	1,941,070
Stress and Anger Management for Blacks With Hypertension	452,702	241,075	693,777
Estrogen Replacement and Atherosclerosis (ERA) Trial	1,383,331	1,213,314	2,596,645
Early Revascularization for Cardiogenic Shock	2,091,709	1,007,797	3,099,506
Does Atherosclerosis Regress With Therapy for Low HDLC?	963,877	427,274	1,391,151
Influence of Cardiopulmonary Bypass (CPB) Temperature on CABG Morbidity	225,634	118,108	343,742
Women's Estrogen/Progestin Lipid-Lowering Hormone Atherosclerosis Regression Trial (WELL-HART)	798,421	507,737	1,306,158
Mode Selection Trial in Sinus Node Dysfunction (MOST)*	2,162,675	1,856,620	4,019,295
Antioxidants and Prevention of Early Atherosclerosis*	792,685	240,268	1,032,953
Postmenopausal Hormone Therapy in Unstable Angina	252,564	257,916	510,480
Postmenopausal Hormone Replacement Therapy After CABG	0	475,913	475,913
Subtotal, Heart and Vascular Diseases	113,613,783	13,383,787	126,997,570
Lung Diseases			
Inhaled Beclomethasone to Prevent Chronic Lung Disease*	2,011,128	550,862	2,561,990
Lung Health Study II†	8,335,925	3,183,450	11,519,375
Subtotal, Lung Diseases	10,347,053	3,734,312	14,081,365
Blood Diseases and Resources			
Multicenter Study of Hydroxyurea in Sickle Cell Anemia—Phase II*†	12,868,076	0	12,868,076
Stroke Prevention in Sickle Cell Anemia (STOP)*	6,007,815	2,434,599	8,442,414
Trial to Reduce Alloimmunization to Platelets (TRAP), Extension†	3,755,849	263,325	4,019,174
Pediatric Hydroxyurea in Sickle Cell Anemia (PED HUG)	396,000	260,000	656,000
Subtotal, Blood Diseases and Resources	23,027,740	2,957,924	25,985,664
Total, NHLBI	**$146,988,576**	**$20,076,023**	**$167,064,599**

* Indicates paid by U01.

† Previously an Institute-Initiated Clinical Trial.

Institute-Initiated Clinical Trials: Fiscal Years 1986-96

Contracts

(Dollars in Thousands)

	Fiscal Year										
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Heart and Vascular Diseases											
Lipid Research Clinics*	$ 3,535	$ —	$ 2,205	$ 1,117	$ 485	$ 967	$ 574	$ 11	$ 622	$ 583	$660
Cardiac Arrhythmia Pilot Study	693	—	—	—	—	—	—	—	—	—	—
Thrombolysis in Myocardial Infarction	6,579	7,399	7,986	—	—	—	—	—	—	—	—
Systolic Hypertension in the Elderly Program (SHEP)	4,137	4,228	2,447	3,820	2,887	1,295	404	369	—	—	—
Studies of Left Ventricular Dysfunction (SOLVD)	7,025	3,619	6,200	6,634	4,855	2,325	902	—	—	—	—
Cardiac Arrhythmia Suppression Trial (CAST)	1,564	5,857	8,125	8,968	9,988	4,872	2,193	—	29	—	—
Multiple Risk Factor Intervention Trial Extension	600	900	—	—	—	—	—	—	—	—	—
Post Coronary Artery Bypass Graft (CABG) Study†	—	400	4,040	4,050	2,832	3,628	5,195	213	—	—	—
Prevention and Treatment of Hypertension Study (PATHS)	—	—	—	195	399	787	564	585	—	—	—
Effects of Digitalis on Survival in Patients With Congestive Heart Failure	—	—	—	—	604	2,619	3,272	3,464	270	2,235	—
Asymptomatic Cardiac Ischemia Pilot (ACIP) Study	—	—	—	—	—	2,862	2,720	630	210	7	—
Psychophysiological Investigations of Myocardial Ischemia (PIMI)	—	—	—	—	—	335	1,400	1,400	433	165	—
Arterial Disease Multifactorial Intervention Trial (ADMIT)	—	—	—	—	—	—	663	2,062	2,341	395	—
Raynaud's Treatment Study	—	—	—	—	—	—	339	1,131	2,532	1,664	221
Antiarrhythmic Versus Implantable Defibrillator (AVID)	—	—	—	—	—	—	250	1,203	1,068	5,348	2,475
Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT)	—	—	—	—	—	—	—	2,760	10,914	3,412	9,676
Activity Counseling Trial (ACT)	—	—	—	—	—	—	—	—	1,260	5,000	—
Postmenopausal Estrogen/ Progestin Interventions (PEPI)	—	—	—	—	—	—	—	—	600	1,305	—
Enhancing Recovery in Coronary Heart Disease (ENRICHD) Patients	—	—	—	—	—	—	—	—	—	1,871	6,993
Atrial Fibrillation Follow-up: Investigation in Rhythm Management (AFFIRM)	—	—	—	—	—	—	—	—	—	883	2,510
Beta-Blocker Evaluation Survival Trial (BEST)	—	—	—	—	—	—	—	—	—	2,500	1,435
Angiographic Trial in Women	—	—	—	—	—	—	—	—	—	—	731
Women's Ischemia Syndrome Evaluation (WISE)	—	—	—	—	—	—	—	—	—	—	1,577
Prevention of Events with Angiotensin Converting Enzyme Inhibitor Therapy (PEACE)	—	—	—	—	—	—	—	—	—	—	3,632
Subtotal, Heart and Vascular Diseases	24,133	22,403	31,003	24,784	22,050	19,690	18,476	13,828	20,279	25,368	29,910
Lung Diseases											
Prospective Investigation of Pulmonary Embolism Diagnosis	1,772	—	—	—	—	—	—	—	—	—	—
High Frequency Intervention	1,026	1,216	300	—	—	—	—	—	—	—	—
Lung Health Study I	1,869	10,100	2,898	5,349	5,875	7,016	10,496	—	3,398	650	350
Childhood Asthma Management Program (CAMP)	—	—	—	—	—	1,289	—	11,361	9,745	5,096	7,977
Clinical Network for the Treatment of Adult Respiratory Distress Syndrome (ARDS)	—	—	—	—	—	1,289	—	11,361	1,800	4,170	4,337
Subtotal, Lung Diseases	4,667	11,316	3,198	5,349	5,875	8,305	10,496	11,361	14,943	9,916	12,664

* Includes Coronary Primary Prevention Trial (CPPT) costs. Beginning in 1994, these funds support the Collaborative Centers for International Studies.

† Gift Fund (unappropriated) used—$322,000 - FY 89; $447,000 - FY 90; $4,662,000 - FY 94; $1,320,000 - FY 95; and $917,720 - FY 96.

(continued)

Institute-Initiated Clinical Trials: Fiscal Years 1986-96 (continued)

Contracts

(Dollars in Thousands)

	Fiscal Year										
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Blood Diseases and Resources											
Clinical Course of Sickle Cell Disease*	—	3,111	2,328	2,361	2,118	1,609	2,161	1,756	2,390	4,375	376
Penicillin Prophylaxis in Sickle Cell Disease (PROPS II)	—	397	860	686	860	1,013	1,058	1,095	226	—	—
Anti-HIV Immunoglobulin (HIVIG) in Prevention of Maternal-Fetal HIV Transmission	—	—	—	—	—	3,016	—	—	3,016	1,819	706
T-Cell Depletion in Unrelated Donor Marrow	—	—	—	—	—	—	—	—	1,310	1,917	1,461
Viral Activation Transfusion Study (VATS)	—	—	—	—	—	—	—	—	—	5,000	5,647
Cord Blood Stem Cell Transplantation Study	—	—	—	—	—	—	—	—	—	—	1,419
Multicenter Study of Hydroxyurea in Sickle Cell Anemia (MSH) Adult Follow-up	—	—	—	—	—	—	—	—	—	—	703
Subtotal, Blood Diseases and Resources	—	3,508	3,188	3,047	2,978	5,638	3,219	2,851	6,942	13,111	10,312
Total, NHLBI, Contracts	**$28,800**	**$37,227**	**$37,389**	**$33,180**	**$30,903**	**$33,633**	**$32,191**	**$28,040**	**$42,164**	**$48,395**	**$52,886**

Cooperative Agreements

(Dollars in Thousands)

	Fiscal Year										
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Heart and Vascular Diseases											
Trials of Hypertension Prevention (TOHP)	$ 1,500	$ 6,166	$ 5,020	$ 4,774	$ 5,760	$ 6,846	$ 5,435	$ 5,111	$ 4,385	$ 1,240	$ 649
Dietary Intervention Study in Children (DISC)	—	1,169	2,051	3,023	4,616	2,154	2,018	1,686	1,615	1,625	1,625
Bypass Angioplasty Revascularization Investigation (BARI)	—	716	4,545	5,539	6,216	6,309	3,952	3,978	3,965	3,882	2,757
Postmenopausal Estrogen/Progestin Interventions (PEPI)	—	550	2,882	1,336	2,158	2,801	2,554	1,516	1,109	584	331
Child and Adolescent Trial for Cardiovascular Health (CATCH)	—	1,210	1,919	1,977	1,012	5,920	5,501	6,077	2,586	2,342	2,682
Cholesterol Reduction in Seniors Program (CRISP)	—	—	—	—	150	1,496	850	—	—	—	—
Dietary Effects on Lipoproteins and Thrombogenic Activity (DELTA)	—	—	—	—	—	—	1,950	3,213	3,121	2,485	132
Obesity Prevention in American Indians (PATHWAYS)	—	—	—	—	—	—	—	1,689	1,814	2,150	3,432
Dietary Approaches to Stop Hypertension (DASH)	—	—	—	—	—	—	—	1,650	2,350	2,513	899
Rapid Early Action for Coronary Treatment (REACT)	—	—	—	—	—	—	—	—	2,609	5,091	4,992
Subtotal, Heart and Vascular Diseases	1,500	9,811	16,417	16,649	19,912	25,526	22,260	24,920	23,555	21,912	17,499
Lung Diseases											
Asthma Clinical Research Network	—	—	—	—	—	—	—	2,500	3,694	3,640	4,526
Asthma and Pregnancy	—	—	—	—	—	—	—	—	1,000	991	1,000
Subtotal, Lung Diseases	—	—	—	—	—	—	—	2,500	4,694	4,631	5,526

* FY 1986 funds were not required.
Note: Numbers may not add to total due to rounding.

Cooperative Agreements (continued)

(Dollars in Thousands)

	Fiscal Year										
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Blood Diseases and Resources											
Hydroxyurea in Patients With Sickle Cell Anemia, Phase I	—	441	479	509	44	—	—	—	—	—	—
Trial to Reduce Alloimmunization to Platelets (TRAP)	—	—	—	747	2,034	2,111	3,483	1,422	—	—	—
Subtotal, Blood Diseases and Resources	—	441	479	1,256	2,078	2,111	3,483	1,422	—	—	—
Total, NHLBI, Cooperative Agreements	**$ 1,500**	**$10,252**	**$16,896**	**$17,905**	**$21,990**	**$27,637**	**$25,743**	**$28,842**	**$28,249**	**$26,543**	**$23,025**
Total, NHLBI-Initiated Clinical Trials	**$30,300**	**$47,479**	**$54,285**	**$51,085**	**$52,893**	**$61,270**	**$57,934**	**$56,882**	**$70,413**	**$74,938**	**$75,911**

Institute-Initiated Clinical Trials, Fiscal Year 1996: Summary by Program

Contracts

	Total Obligations Prior to FY 1996*	Total FY 1996 Obligations	Total Obligations to Date
Heart and Vascular Diseases			
Lipid Research Clinics*	$189,178,255	$660,000	$189,838,255
Raynaud's Treatment Study	5,665,879	220,340	5,886,219
Antiarrhythmic Versus Implantable Defibrillator (AVID)	7,868,326	2,475,291	10,343,617
Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT)	17,086,355	9,676,000	26,762,355
Enhancing Recovery in Coronary Heart Disease Patients (ENRICHD)	1,870,614	6,993,247	8,863,861
Atrial Fibrillation Follow-up: Investigation in Rhythm Management (AFFIRM)	883,105	2,510,281	3,393,386
Beta-Blocker Evaluation Survival Trial (BEST)	2,500,000	1,435,000	3,935,000
Angiographic Trial in Women	0	731,092	731,092
Women's Ischemia Syndrome Evaluation (WISE)	0	1,576,931	1,576,931
Prevention of Events with Angiotensin Converting Enzyme Inhibitor Therapy (PEACE)	0	3,631,508	3,631,508
Subtotal, Heart and Vascular Diseases	225,052,534	29,909,690	254,962,224
Lung Diseases			
Lung Health Study I	48,588,219	350,000	48,938,219
Childhood Asthma Management Program (CAMP)	27,490,800	7,977,000	35,467,800
Clinical Network for the Treatment of Adult Respiratory Distress Syndrome (ARDS)	5,970,000	4,337,000	10,307,000
Subtotal, Lung Diseases	82,049,019	12,664,000	94,713,019
Blood Diseases and Resources			
Clinical Course of Sickle Cell Disease (CCSCD)	55,391,924	376,489	55,768,413
Anti-HIV Immunoglobulin (HIVIG) in Prevention of Maternal-Fetal HIV Transmission	7,850,988	705,620	8,556,608
T-Cell Depletion in Unrelated Donor Marrow	3,227,626	1,461,107	4,688,733
Viral Activation Transfusion Study (VATS)	5,000,285	5,647,135	10,647,420
Cord Blood Stem Cell Transplantation Study	0	1,418,661	1,418,661
Multicenter Study of Hydroxyurea in Sickle Cell Anemia (MSH) Adult Follow-up	0	703,608	703,608
Subtotal, Blood Diseases and Resources	71,470,823	10,312,620	81,783,443
Total, NHLBI, Clinical Trials—Contracts	**$378,572,376**	**$52,886,310**	**$431,458,686**

* Includes Coronary Primary Prevention Trial (CPPT) costs. Beginning in 1994, these funds support the Collaborative Centers for International Studies.

Institute-Initiated Clinical Trials, Fiscal Year 1996: Summary by Program (continued)

Cooperative Agreements

	Total Obligations Prior to FY 1996*	Total FY 1996 Obligations	Total Obligations to Date
Heart and Vascular Diseases			
Trials of Hypertension Prevention (TOHP)	$46,236,153	$ 648,582	$ 46,884,735
Child and Adolescent Trial for Cardiovascular Health (CATCH)	28,543,642	2,682,000	31,225,642
Postmenopausal Estrogen/Progestin Interventions (PEPI)	15,495,639	331,061	15,826,700
Bypass Angioplasty Revascularization Investigation (BARI)	39,103,330	2,757,380	41,860,710
Dietary Intervention Study in Children (DISC)	19,957,698	1,624,701	21,582,399
Dietary Effects of Lipoproteins and Thrombogenic Activity (DELTA)	10,769,238	132,425	10,901,663
Obesity Prevention in American Indians (PATHWAYS)	5,653,083	3,432,000	9,085,083
Dietary Approaches to Stop Hypertension (DASH)	6,513,518	898,988	7,412,506
Rapid Early Action for Coronary Treatment (REACT)	7,699,595	4,991,843	12,691,438
Subtotal, Heart and Vascular Diseases	179,971,896	17,498,980	197,470,876
Lung Diseases			
Asthma Clinical Research Network (ACRN)	9,834,350	4,526,481	14,360,831
Asthma and Pregnancy Studies	1,990,616	999,987	2,990,603
Subtotal, Lung Diseases	11,824,966	5,526,468	17,351,434
Blood Diseases and Resources	**0**	**0**	**0**
Subtotal, Blood Diseases and Resources	0	0	0
Total, NHLBI, Cooperative Agreements	**$191,796,862**	**$23,025,448**	**$214,822,310**
Total, NHLBI-Initiated Clinical Trials	**$570,369,238**	**$75,911,758**	**$646,280,996**

* Includes FY 1976 Transition Quarter.

Raynaud's Treatment Study: Heart and Vascular Diseases Program, Initiated in Fiscal Year 1992

The primary goal of this randomized multicenter clinical trial of primary Raynaud's patients (N = 313) is to test the efficacy of Nifedipine XL and temperature biofeedback and to compare the two treatments. The primary outcome is a self-reported, 1-month attack rate collected 1 year after randomization. Results are expected by fall of 1996.

Obligations

Funding History:
Fiscal Year 1996—$220,340
Fiscal Year 1992-95—$5,665,879
Total Funding to Date—$5,886,219

Current Active Organizations and Contract Numbers

1. The Johns Hopkins University, Baltimore, Maryland —HC-25119
2. University of Medicine and Dentistry of New Jersey, New Brunswick, New Jersey —HC-25120
3. University of Pittsburgh, Pittsburgh, Pennsylvania —HC-25121
4. Medical University of South Carolina, Charleston, South Carolina —HC-25122
5. Wayne State University, Detroit, Michigan —HC-25123
6. Clinical Trials and Survey Corporation, Baltimore, Maryland —HC-35127

Antiarrhythmic Versus Implantable Defibrillator (AVID): Heart and Vascular Diseases Program, Initiated in Fiscal Year 1992

This randomized clinical trial evaluates whether the use of an implantable cardiac defibrillator (ICD) will result in reduction in total mortality, when compared with conventional pharmacologic therapy, in patients who have been resuscitated from sudden cardiac death or are otherwise at very high risk of mortality from arrhythmic causes. A pilot phase was completed in June 1994 with 200 patients; the full-scale trial is in progress and will enroll approximately 1,000 patients.

Obligations

Funding History:
Fiscal Year 1996—$2,745,291
Fiscal Year 1992-95—$7,868,326
Total Funding to Date—$10,343,617

Current Active Organization and Contract Number

1. University of Washington, Seattle, Washington —HC-25117

Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT): Heart and Vascular Diseases Program, Initiated in Fiscal Year 1993

The ALLHAT is a practice-based, randomized clinical trial to determine whether the combined incidence of fatal CHD and nonfatal myocardial infarction (MI) differs between diuretic-based and newer antihypertensive treatments (ACE inhibitor calcium channel blocker, alpha blocker) in high-risk hypertensive patients. The lipid-lowering component of the study will determine whether lowering serum cholesterol with an HMG CoA reductase inhibitor will reduce the total mortality in a subset of hypertensive patients with moderately elevated LDL cholesterol.

Obligations

Funding History:
Fiscal Year 1996—$9,676,000
Fiscal Year 1994-95—$17,086,355
Total Funding to Date—$26,762,355

Current Active Organization and Contract Number

1. University of Texas Health Science Center, Houston, Texas —HC-35130

Enhancing Recovery in Coronary Heart Disease Patients (ENRICHD): Heart and Vascular Diseases Programs, Initiated in Fiscal Year 1995

The objective of this multicenter, randomized clinical trial is to test the efficacy of interventions that provide social support and ameliorate depression in post-MI patients. CHD death and reinfarction are the primary end points. Secondary outcomes include health-related quality of life and adherence to medical and lifestyle change regiments.

Obligations

Funding History:
Fiscal Year 1996—$6,993,247
Fiscal Year 1995—$1,870,614
Total Funding to Date—$8,863,861

Current Active Organizations and Contract Numbers

1. University of North Carolina, Chapel Hill, North Carolina —HC-55140
2. University of Alabama, Birmingham, Alabama —HC-55141
3. Duke University, Durham, North Carolina —HC-55142
4. University of Miami, Coral Gables, Florida —HC-55143
5. Rush-Presbyterian-St. Lukes Medical Center, Chicago, Illinois —HC-55144
6. Stanford University, Palo Alto, California —HC-55145
7. Washington University, St. Louis, Missouri —HC-55146
8. University of Washington, Seattle, Washington —HC-55147
9. Yale University, New Haven, Connecticut —HC-55148

Atrial Fibrillation Followup: Investigation in Rhythm Management (AFFIRM): Heart and Vascular Disease Program, Initiated in Fiscal Year 1995

This clinical trial compares the impact on total mortality of a strategy of attempting to maintain sinus rhythm with antiarrhythmic drugs to a strategy of merely controlling the heart rate. Important secondary end points will include quality of life and cost of therapies.

Obligations

Funding History:
Fiscal Year 1996—$2,510,281
Fiscal Year 1995—$883,105
Total Funding to Date—$3,393,386

Current Active Organization and Contract Number

1. Statistics and Epidemiology Research Corporation, Seattle, Washington —HC-55139

Beta-Blocker Evaluation Survival Trial (BEST): Heart and Vascular Diseases Program, Initiated in Fiscal Year 1995

The primary objective of this clinical trial is to determine whether the addition of a beta-blocking agent (bucindolol) to standard therapy reduces the total mortality of patients with moderate to severe congestive heart failure.

Obligations

Funding History:
Fiscal Year 1996—$1,435,000
Fiscal Year 1995—$2,500,000
Total Funding to Date—$3,935,000

Current Active Organization and Contract Number

1. U.S. Department of Veterans Affairs Medical Center, Palo Alto, California —HC-40204

Angiographic Trial in Women: Heart and Vascular Diseases Program, Initiated in Fiscal Year 1996

The multicenter, randomized trial will assess whether or not hormone replacement therapy and/or antioxidant treatment will stabilize or inhibit progression and induce regression of coronary plaques in women. The trial will also elucidate the mechanisms by which these treatments modify atherosclerosis. The primary end points are angiographic changes.

Obligations

Funding History:
Fiscal Year 1996—$731,092
Funding to Date—$731,092

Current Active Organizations and Grant Numbers

1. George Washington University, Washington, DC —HV-68165
2. University of Alabama, Birmingham, Alabama —HV-68166
3. Duke University, Durham, North Carolina —HV-68167
4. Medlantic Research Institute, Washington, DC —HV-68168
5. Hartford Hospital, Hartford, Connecticut —HV-68169
6. The Johns Hopkins University, Baltimore, Maryland —HV-68170

Women's Ischemia Syndrome Evaluation (WISE): Heart and Vascular Diseases Program, Initiated in Fiscal Year 1996

The multicenter trial seeks to improve the diagnostic reliability of cardiovascular testing in the evaluation of ischemic heart disease in women. Secondary objectives are to develop safe, efficient, and cost-effective diagnostic approaches for evaluating women with suspected ischemic heart disease; to determine the frequency of myocardial ischemia in the absence of significant epicardial coronary stenosis; and to ascertain the frequency of nonischemic or noncardiac chest pain.

Obligations

Funding History:
Fiscal Year 1996—$1,578,931
Total Funding to Date—$1,578,931

Current Active Organizations and Contract Numbers

1. University of Alabama, Birmingham, Alabama —HV-68161
2. University of Pittsburgh, Pittsburgh, Pennsylvania —HV-68162
3. University of Florida, Gainesville, Florida —HV-68163
4. Allegheny Singer Research Institute, Pittsburgh, Pennsylvania —HV-68164

Prevention of Events with Angiotensin Converting Enzyme Inhibitor Therapy (PEACE): Heart and Vascular Diseases Program, Initiated in Fiscal Year 1996

The multicenter, randomized trial will determine whether the addition of angiotensin converting enzyme (ACE) inhibitor to standard therapy in patients with known coronary artery disease and preserved left ventricular function will prevent CVD mortality and reduce the risk of experiencing a myocardial infarction.

Obligations

Funding History:
Fiscal Year 1996—$3,631,508
Total Funding to Date—$3,631,508

Current Active Organization and Contract Number

1. George Washington University Biostatistics Center, Rockville, Maryland —HC-65149

Trials of Hypertension Prevention (TOHP): Heart and Vascular Diseases Program, Initiated in Fiscal Year 1986

This trial is testing the feasibility and efficacy of nonpharmacological interventions in the primary prevention of hypertension in men and women at increased risk of developing hypertension.

Obligations

Funding History:
Fiscal Year 1996—$648,582
Fiscal Years 1986-95—$46,236,153
Total Funding to Date—$46,884,735

Current Active Organization and Grant Number

1. Brigham and Women's Hospital, Boston, Massachusetts —HL-37852

Child and Adolescent Trial for Cardiovascular Health (CATCH): Heart and Vascular Diseases Program, Initiated in Fiscal Year 1987

This trial examines the effectiveness of school and home interventions for reducing CVD risk. Intervention components include a school food service program, a physical education program, a classroom curriculum, and a home curriculum. The children's behavioral and physiological risk factors will be tracked into their adolescent years.

Obligations

Funding History:
Fiscal Year 1996—$2,682,000
Fiscal Years 1987-95—$28,543,642
Total Funding to Date—$31,225,642

Current Active Organizations and Grant Numbers

1. University of Minnesota, Minneapolis, Minnesota —HL-39852
2. University of California, San Diego, La Jolla, California —HL-39870
3. Tulane University School of Public Health and Tropical Medicine, New Orleans, Louisiana —HL-39906
4. University of Texas Health Science Center, Houston, Texas —HL-39927
5. New England Research Institute, Inc., Watertown, Massachusetts —HL-47098

Postmenopausal Estrogen/Progestin Interventions (PEPI): Heart and Vascular Diseases Program, Initiated in Fiscal Year 1987

The PEPI trial assessed the effects of various postmenopausal estrogen replacement therapies on selected cardiovascular risk factors and osteoporosis risk factors. In FY 1994, a 3-year followup to assess endometrial and breast cancer risk was begun with contract support.

Obligations

Funding History*: Contracts
Fiscal Year 1996—$0
Fiscal Years 1994-95—$1,905,441
Total Funding to Date—$1,905,441

Funding History*: Cooperative Agreements
Fiscal Year 1996—$331,061
Fiscal Years 1987-95—$15,495,639
Total Funding to Date—$15,826,700

Current Active Organizations and Grant and Contract Numbers

1. University of Texas Health Science Center, San Antonio, Texas —HL-40154 —HV-48138
2. George Washington University, Washington, DC —HL-40185 —HV-48132
3. University of Iowa, Iowa City, Iowa —HV-48137
4. Stanford University, Stanford, California —HL-40205 —HV-48134
5. University of California, San Diego, La Jolla, California —HL-40207 —HV-48136
6. The Johns Hopkins University, Baltimore, Maryland —HL-40231 —HV-48133
7. Bowman Gray School of Medicine, Winston-Salem, North Carolina —HL-40232 —HV-48139
8. University of California, Los Angeles, Los Angeles, California —HL-40273 —HV-48135

* PEPI is cofunded by the NHLBI, NICHD, NIAMS, NIDDK, and NIA. Figures here are the NHLBI only.

Bypass Angioplasty Revascularization Investigation (BARI): Heart and Vascular Diseases Program, Initiated in Fiscal Year 1987

This trial assesses the long-term relative efficacy of percutaneous transluminal coronary angioplasty and CABG surgery in patients who require revascularization and have coronary anatomy suitable for either procedure.

Obligations

Funding History:
Fiscal Year 1996—$2,757,380
Fiscal Years 1987-95—$39,103,330
Total Funding to Date—$41,860,710

Current Active Organizations and Grant Numbers

Clinical Units

1. Mayo Foundation, Rochester, Minnesota —HL-38493
2. St. Louis University, St. Louis, Missouri —HL-38504
3. Montreal Heart Institute, Montreal, Canada —HL-38509
4. University of Alabama, Birmingham, Alabama —HL-38512
5. Beth Israel Hospital, Boston, Massachusetts —HL-38514
6. Virginia Commonwealth University, Richmond, Virginia —HL-38515
7. Duke University, Durham, North Carolina —HL-38516
8. Cleveland Clinic Foundation, Cleveland, Ohio —HL-38518
9. New York Medical College, Valhalla, New York —HL-38524
10. University Hospital, Boston, Massachusetts —HL-38525
11. University of Michigan, Ann Arbor, Michigan —HL-38529
12. Rhode Island Hospital, Providence, Rhode Island —HL-38532
13. University of Massachusetts Medical School, Worcester, Massachusetts —HL-38556

Coordinating Center and Core Laboratories

14. University of Pittsburgh, Pittsburgh, Pennsylvania —HL-38610
15. Stanford University, Stanford, California —HL-38642
16. St. Louis University, St. Louis, Missouri —HL-42145

Dietary Intervention Study in Children (DISC): Heart and Vascular Diseases Program, Initiated in Fiscal Year 1987

The objective of the DISC trial is to assess the feasibility, acceptability, efficacy, and safety of dietary intervention in children and adolescents with elevated LDL cholesterol levels.

Obligations

Funding History:
Fiscal Year 1996—$1,624,701
Fiscal Years 1987-95—$19,957,698
Total Funding to Date—$21,582,399

Current Active Organizations and Grant Numbers

1. Northwestern University, Chicago, Illinois —HL-37947
2. Maryland Medical Research Institute, Baltimore, Maryland —HL-37948
3. Kaiser Foundation Research Institute, Portland, Oregon —HL-37954
4. University of Iowa, Iowa City, Iowa —HL-37962
5. University of Medicine and Dentistry of New Jersey, Newark, New Jersey —HL-37966
6. The Johns Hopkins University, Baltimore, Maryland —HL-37975
7. Children's Hospital, New Orleans, Louisiana —HL-38110

Dietary Effects on Lipoproteins and Thrombogenic Activity (DELTA): Heart and Vascular Diseases Program, Initiated in Fiscal Year 1992

The DELTA study is a unique multicenter study to evaluate the effects of carefully controlled diets on lipoproteins and clotting factors in different demographic groups.

Obligations

Funding History:
Fiscal Year 1996—$132,425
Fiscal Year 1993-95—$10,769,238
Total Funding to Date—$10,901,663

Current Active Organization and Grant Number

1. University of North Carolina, Chapel Hill, North Carolina —HL-49644

Obesity Prevention in Young American Indians (PATHWAYS): Heart and Vascular Diseases Program, Initiated in Fiscal Year 1993

This full-scale trial assesses the effectiveness of a school-based intervention in the primary prevention of obesity among American Indian elementary school children.

Obligations

Funding History:
Fiscal Year 1996—$3,432,000
Fiscal Year 1993-95—$5,653,083
Total Funding to Date—$9,085,083

Current Active Organizations and Grant Numbers

1. Coordinating Center: University of North Carolina, Chapel Hill, North Carolina —HL-50907
2. University of New Mexico, Albuquerque, Albuquerque, New Mexico —HL-50867
3. The Johns Hopkins University, Baltimore, Maryland —HL-50869
4. University of Minnesota, Minneapolis, Minnesota —HL-50885
5. Gila River Indian Community, Sacaton, Arizona —HL-50905

Dietary Approaches to Stop Hypertension (DASH): Heart and Vascular Diseases Program, Initiated in Fiscal Year 1993

The object of the study is to conduct a collaborative, multicenter study to test the effectiveness of several dietary patterns in lowering blood pressure.

Obligations

Funding History:
Fiscal Year 1996—$898,988
Fiscal Year 1993-95—$6,513,518
Total Funding to Date—$7,412,506

Current Active Organizations and Grant Numbers

1. Coordinating Center: Kaiser Foundation Research Institute, Oakland, California —HL-50982
2. Pennington Biomedical Research Center, Baton Rouge, Louisiana —HL-50968
3. Brigham and Women's Hospital, Boston, Massachusetts —HL-50972
4. Duke University, Durham, North Carolina —HL-50977
5. The Johns Hopkins University, Baltimore, Maryland —HL-50981

Rapid Early Action for Coronary Treatment (REACT): Heart and Vascular Diseases Program, Initiated in Fiscal Year 1994

This community trial investigates the effectiveness and impact of community educational interventions on patient delay time from experiencing symptoms of acute MI to contact with the health care system. Interventions will include provider and patient education, public education, and community organization.

Obligations

Funding History:
Fiscal Year 1996—$4,991,843
Fiscal Year 1994-95—$7,699,595
Total Funding to Date—$12,691,438

Current Active Organizations and Grant Numbers

1. University of Texas Health Science Center, Houston, Texas —HL-53135
2. King County Department of Emergency Medical Services, Seattle, Washington —HL-53141
3. University of Alabama, Birmingham, Alabama —HL-53142
4. New England Research Institute, Inc., Watertown, Massachusetts —HL-53149
5. University of Minnesota, Minneapolis, Minnesota —HL-53211
6. Tufts University, Boston, Massachusetts —HL-54517

Lung Health Study I: Lung Diseases Program, Initiated in Fiscal Year 1984

The trial determined the effects on rate of decline in pulmonary function of "special care," compared with referral to "usual care," in a population of smokers identified as having mild abnormalities in pulmonary function. Special care included smoking cessation counseling, bronchodilator administration, and diligent followup. In usual care, the subject was referred to his usual source of medical care.

Obligations

Funding History:
Fiscal Year 1996—$350,000
Fiscal Years 1984-95—$48,588,219
Total Funding to Date—$48,938,219

Current Active Organization and Contract Number

1. Coordinating Center: University of Minnesota, Minneapolis, Minnesota —HR-46002

Childhood Asthma Management Program (CAMP): Lung Diseases Program, Initiated in Fiscal Year 1991

The purpose of this study is to determine, in a population of 5- to 9-year-old children with asthma, if, in combination with beta$_2$ agonist bronchodilator as needed, regular use of either of two types of anti-inflammatory medications results in greater lung function and less bronchial hyperresponsiveness, patient morbidity, use of health care resources, and improved quality of life during a 5-year period. The study will also compare the long-term safety and side effects of the three medications during the 5-year period.

Obligations

Funding History:
Fiscal Year 1996—$7,977,000
Fiscal Years 1991-95—$27,490,800
Total Funding to Date—$35,467,800

Current Active Organizations and Contract Numbers

1. The Johns Hopkins University, Baltimore, Maryland —HR-16044
2. University of California, San Diego, La Jolla, California —HR-16045
3. University of New Mexico, Albuquerque, Albuquerque, New Mexico —HR-16046
4. Hospital for Sick Children, Toronto, Ontario, Canada —HR-16047
5. National Jewish Center for Immunology and Respiratory Medicine, Denver, Colorado —HR-16048
6. Brigham and Women's Hospital, Boston, Massachusetts —HR-16049
7. ASTHMA, Inc., Seattle, Washington —HR-16050
8. Washington University, St. Louis, Missouri —HR-16051
9. The Johns Hopkins University, Baltimore, Maryland —HR-16052

Clinical Network for the Treatment of the Adult Respiratory Distress Syndrome (ARDS): Lung Diseases Program, Initiated in Fiscal Year 1994

The objective of this Network is to test new therapeutic agents with a potential for improving the outcome of patients with ARDS and those at risk of developing ARDS. It is anticipated that several protocols will be developed and carried out during the project period.

Obligations

Funding History:
Fiscal Year 1996—$4,337,000
Fiscal Year 1994-95—$5,970,000
Total Funding to Date—$10,307,000

Current Active Organizations and Contract Numbers

1. Vanderbilt University, Nashville, Tennessee —HR-46054
2. University of Washington, Seattle, Washington —HR-46055
3. Duke University Medical Center, Durham, North Carolina —HR-46056
4. University of Michigan, Ann Arbor, Michigan —HR-46057
5. University of Pennsylvania Hospital, Philadelphia, Pennsylvania —HR-46058
6. University of California, San Francisco, San Francisco, California —HR-46059
7. Cleveland Clinic Foundation, Cleveland, Ohio —HR-46060
8. University of Colorado, Denver, Colorado —HR-46061
9. Latter Day Saints Hospital, Salt Lake City, Utah —HR-46062
10. University of Maryland, Baltimore, Maryland —HR-46063
11. Coordinating Center: Massachusetts General Hospital, Boston, Massachusetts —HR-46064

Asthma Clinical Research Network: Lung Diseases Program, Initiated in Fiscal Year 1993

The overall objective is to establish a network of interactive asthma clinical research groups to rapidly assess novel treatment methods and to ensure that these findings on optimal management of asthmatic patients are rapidly disseminated to practitioners and health care professionals.

Obligations

Funding History:
Fiscal Year 1996—$4,526,481
Fiscal Year 1993-95—$9,834,350
Total Funding to Date—$14,360,831

Current Active Organizations and Grant Numbers

1. Jefferson Medical College, Philadelphia, Pennsylvania —HL-51810
2. University of California, San Francisco, San Francisco, California —HL-51823
3. Brigham and Women's Hospital, Boston, Massachusetts —HL-51831

4. National Jewish Center for Immunology and Respiratory Medicine, Denver, Colorado —HL-51834
5. University of Wisconsin, Madison, Wisconsin —HL-51843
6. Pennsylvania State University, Hershey, Pennsylvania —HL-51845
7. Columbia University, New York, New York —HL-56443

Asthma and Pregnancy Studies: Lung Diseases Program, Initiated in Fiscal Year 1994

This 4-year multicenter collaborative study is aimed at determining the effects of asthma and its treatment on pregnancy and how pregnancy affects asthma. Women will be enrolled from 11 clinical centers as part of the NICHD Maternal Fetal Medicine Units Clinical Network.

Obligations

Funding History:
Fiscal Year 1996—$999,987
Fiscal Year 1994-95—$1,990,616
Total Funding to Date—$2,990,603

Current Active Organizations and Grant Numbers

1. University of Tennessee, Memphis, Tennessee —HD-21414
2. University of Alabama, Birmingham, Alabama —HD-27869
3. Ohio State University, Columbus, Ohio —HD-27915
4. Wayne State University, Detroit, Michigan —HD-27917
5. University of Texas Southwest Medical Center, Dallas, Texas —HD-34116
6. University of Miami, Miami, Florida —HD-34122
7. Thomas Jefferson University, Philadelphia, Pennsylvania —HD-34136
8. University of Utah, Salt Lake City, Utah —HD-34208
9. University of Texas Health Sciences Center, San Antonio, Texas —HD-34210

Clinical Course of Sickle Cell Disease: Blood Diseases and Resources Program, Initiated in Fiscal Year 1977

This collaborative study is designed to identify and evaluate the factors that determine the clinical course of, and the presence or absence of complications in, sickle cell disease.

Obligations

Funding History:
Fiscal Year 1996—$376,489
Fiscal Years 1977-95—$55,391,924
Total Funding to Date—$55,768,413

Current Active Organizations and Contract Numbers

1. Interfaith Medical Center, Brooklyn, New York, New York —HB-47105
2. Duke University, Durham, North Carolina —HB-47106

Anti-HIV Immunoglobulin (HIVIG) in Prevention of Maternal-Fetal HIV Transmission: Blood Diseases and Resources Program, Initiated in Fiscal Year 1991

The objective of this study is to evaluate the potential benefits of anti-HIVIG in reducing the rate of infection of infants born to HIV-infected women. More than 50 clinical centers have been selected to participate in this trial.

Obligations

Funding History:
Fiscal Year 1996—$705,620
Fiscal Years 1991-95—$7,850,988
Total Funding to Date—$8,556,608

Current Active Organization and Contract Number

1. North American Biologics, Inc., Miami, Florida —HB-57128

T-Cell Depletion in Unrelated Donor Marrow Transplantation: Blood Diseases and Resources Program, Initiated in Fiscal Year 1994

The purpose of this randomized multicenter clinical trial is to determine whether a reduction in morbidity and mortality from acute and chronic graft versus host disease (GvHD) can be achieved without a counterbalancing increase in relapse of leukemia in patients receiving an unrelated donor marrow transplant.

Obligations

Funding History:
Fiscal Year 1996—$1,461,107
Fiscal Year 1994-95—$3,227,626
Total Funding to Date—$4,688,733

Current Active Organizations and Contract Numbers

1. Emmes Corporation, Potomac, Maryland —HB-47094
2. University of Minnesota, Minneapolis, Minnesota —HB-47095
3. Fred Hutchinson Cancer Research Center, Seattle, Washington —HB-47096
4. University of Kentucky, Lexington, Kentucky —HB-47097
5. Sloan Kettering Institute for Cancer Research, New York, New York —HB-47098

Viral Activation Transfusion Study (VATS): Blood Diseases and Resources Program, Initiated in Fiscal Year 1995

This trial is designed to determine if activation of HIV-1 and cytomegalovirus occurs following blood transfusion in HIV-1-infected persons, thereby adversely affecting their prognosis. This study will also evaluate the role of donor leukocytes producing this activation by examining the effect of removing leukocytes by filtration or abolishing their ability to proliferate by gamma irradiation.

Obligations

Funding History:
Fiscal Year 1996—$5,647,135
Fiscal Year 1995—$5,000,285
Total Funding to Date—$10,647,420

Current Active Organizations and Contract Numbers

1. Case Western Reserve University, Cleveland, Ohio —HB-57115
2. Georgetown University, Washington, DC —HB-57116
3. The Miriam Hospital, Providence, Rhode Island —HB-57117
4. Mt. Sinai Medical Center, New York, New York —HB-57118
5. The Ohio State University, Columbus, Ohio —HB-57119
6. University of California, San Diego, La Jolla, California —HB-57120
7. University of California, San Francisco, San Francisco, California —HB-57121
8. University of North Carolina at Chapel Hill, Chapel Hill, North Carolina —HB-57122
9. University of Pittsburgh, Pittsburgh, Pennsylvania —HB-57123
10. University of Texas, Galveston, Texas —HB-57124
11. University of Washington, Seattle, Washington —HB-57125
12. Central Laboratory: Irwin Memorial Blood Center, San Francisco, California —HB-57126
13. Coordinating Center: New England Research Institute, Inc., Watertown, Massachusetts —HB-57127

Cord Blood Stem Cell Transplantation Study: Blood Diseases and Resources Program, Initiated in Fiscal Year 1996

The multicenter study is designed to show whether umbilical cord blood stem cell transplants from unrelated, newborn donors is a safe and efficient alternative to bone marrow transplantation for children and adults with a variety of cancers, blood diseases, and genetic disorders. The study includes a Coordinating Center, seven Transplant Centers, and three Collection and Storage Centers.

Obligations

Funding History:
Fiscal Year 1996—$1,418,661
Total Funding to Date—$1,418,661

Current Active Organizations and Contract Numbers

1. Emmes Corporation, Potomac, Maryland —HB-67132
2. Dana-Farber Cancer Center, Boston, Massachusetts —HB-67133
3. Fred Hutchinson Cancer Research Center, Seattle, Washington —HB-67134
4. University of California at Los Angeles, Los Angeles, California —HB-67135
5. Children's Hospital of Orange County, Orange, California —HB-67136
6. Indiana University, Indianapolis, Indiana —HB-67137
7. Duke University Medical Center, Durham, North Carolina —HB-67138
8. University of Minnesota, Minneapolis, Minnesota —HB-67139
9. Children's Hospital of Orange County, Orange, California —HB-67140
10. Duke University Medical Center, Durham, North Carolina —HB-67141
11. University of California at Los Angeles, Los Angeles, California —HB-67142

Multicenter Study of Hydroxyurea in Sickle Cell Anemia (MSH) Adult Follow-up: Blood Diseases and Resources Program, Initiated in Fiscal Year 1996

The MSH was a randomized, double-blind, placebo-controlled trial conducted at 21 clinical centers. The trial was designed to test the efficacy of orally administered hydroxyurea in the lowering of painful crisis rates of sickle cell anemia. The trial was stopped early because of proof of efficacy of hydroxyurea in decreasing painful sickle cell crises, hospitalizations for painful crises, acute chest syndrome, and total number of units of transfused blood by approximately 50 percent. The Data Coordinating Center is now in active follow-up of adult patients for the long-term effects, if any, of hydroxyurea.

Obligations

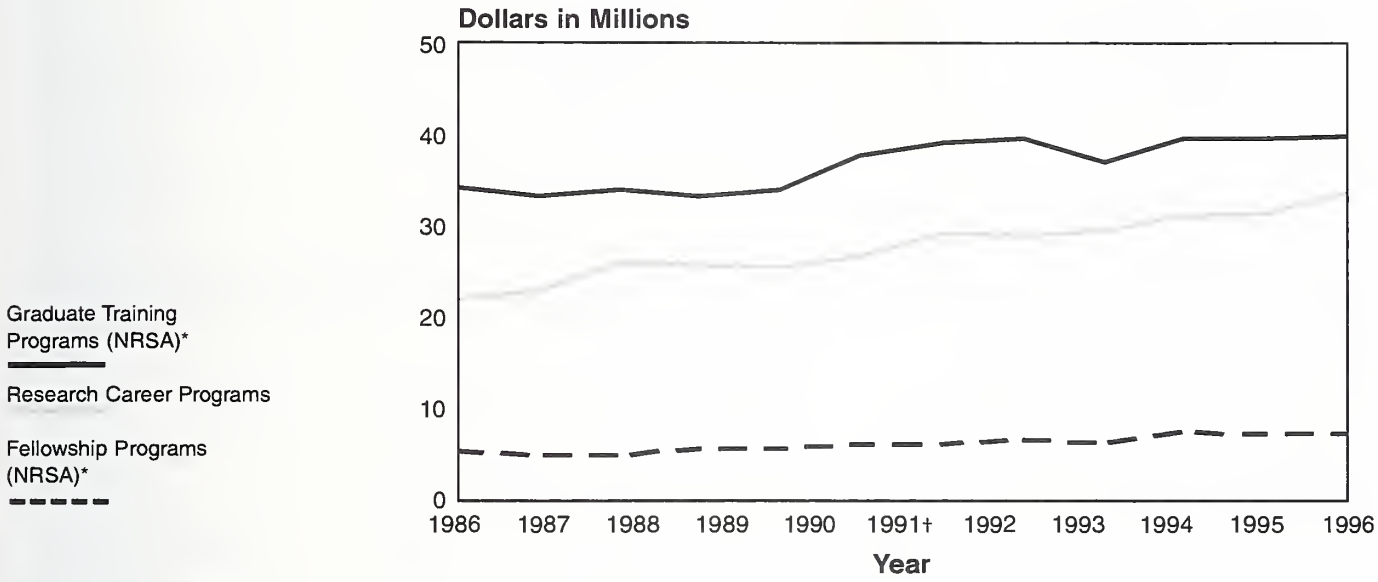
Funding History:
Fiscal Year 1996—$703,608
Total Funding to Date—$703,608

Current Active Organization and Contract Number

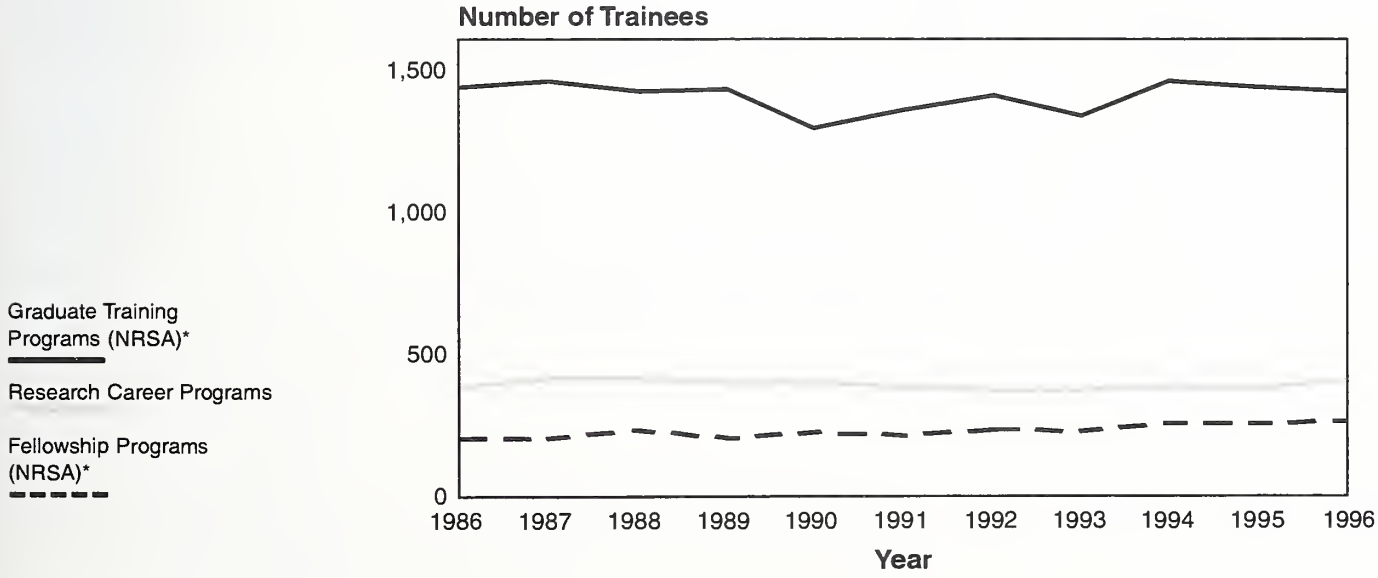
1. Maryland Medical Research Institute, Baltimore, Maryland —HB-67129

12. Research Training and Career Development Programs

NHLBI Research Training and Career Development Obligations: Fiscal Years 1986-96



NHLBI Full-Time Training Positions: Fiscal Years 1986-96



* National Research Service Awards.

† In FY 1991, the NIH increased the salary ceiling for research career awards from $40,000 to $50,000 and implemented a new stipend schedule for NRS Awards.

Note: Numbers of awards and trainees may not agree with other tables due to the method of counting supplements.

Training Awards, Full-Time Training Positions, and Obligations by Activity*: Fiscal Year 1996

	Number of Awards Obligated	Trainees (Full-Time Training Positions)	Direct Cost	Indirect Cost	Total Cost	Percent of Total NHLBI Training Program Dollars
Fellowship Programs						
Predoctoral Fellowship Award for Minority Students (F31)	21	21	$ 550,810	$ 0	$ 550,810	1.2%
Individual NRSA (F32)	220	220	6,482,750	0	6,482,750	13.6
Senior Fellowships NRSA (F33)	7	7	233,560	0	233,560	0.5
Minority Access to Research Careers (MARC) Fellowships NRSA (F34)	0	0	0	0	0	0.0
Intramural NRSA (F35)	0	0	0	0	0	0.0
Subtotal, Fellowships	248	248	7,267,120	0	7,267,120	15.3
Graduate Training Programs						
Institutional NRSA (T32)	183	1,216	34,434,279	2,283,847	36,718,126	77.3
Minority Institutional NRSA (T32)	6	30	644,149	35,177	679,326	1.4
Off-Quarter Professional Student Training NRSA (T34, T35)	12	78	926,743	73,920	1,000,663	2.1
Minority Access to Research Careers (MARC) (T36)	0	0	5,000	0	5,000	0.0
Short-Term Training for Minority Students (T35M)	43	113	1,698,225	135,860	1,834,085	3.9
Subtotal, Training Grants	244	1,437	37,708,396	2,528,804	40,237,200*	84.7
Total, Training Programs	**492**	**1,685**	**$44,975,516**	**$2,528,804**	**$47,504,320***	**100.0%**

* Excludes assessment of $982,000.

History of Training Obligations by Activity: Fiscal Years 1986-96

(Dollars in Thousands)

	Fiscal Year										
	1986	1987	1988	1989*	1990	1991*	1992	1993	1994	1995	1996
Fellowship Programs											
Predoctoral Fellowship Award for Minority Students (F31)	$ —	$ —	$ —	$ —	$ —	$ —	$ 55	$ 97	$ 199	$ 304	$ 551
Individual NRSA (F32)	4,490	4,599	5,350	5,271	5,654	5,554	6,041	5,867	6,853	6,651	6,483
Senior Fellowships NRSA (F33)	77	121	6	95	129	205	141	141	141	99	233
Minority Access to Research Careers Fellowships NRSA (F34)	35	26	53	13	—	—	—	—	—	—	—
Intramural NRSA (F35)	176	138	147	30	91	133	146	70	69	49	—
Subtotal, Fellowships	4,778	4,884	5,556	5,409	5,874	5,892	6,383	6,175	7,262	7,103	7,267
Graduate Training Programs											
Institutional NRSA (T32)	31,744	32,483	32,031	32,273	36,751[A]	37,533[B]	37,355[C]	34,846[D]	36,534[E]	36,270[F]	36,718[G]
Minority Institutional NRSA (T32)	115	283	288	348	398	432	684	35	735	982	679
Minority Summer Hypertension NRSA (T35, T34)	599	320	126	80	—	—	—	—	—	—	—
Minority Summer Pulmonary NRSA (T34, T35)	28	2	24	—	—	—	—	—	—	—	—
Off-Quarter Professional Student Training NRSA (T34, T35)	1,020	1,069	1,068	1,386	957	1,150	1,106	1,744	1,132	951	1,001
Minority Access to Research Careers (MARC) (T36)	7	7	14	10	19	19	22	15	5	5	5
Short-Term Training for Minority Students (T35M)	—	—	—	—	—	339	717	573	1,616	1,760	1,834
Subtotal, Training Grants	33,513	34,164	33,551	34,097	38,125[A]	39,473[B]	39,884[C]	37,213[D]	40,022[E]	39,968[F]	40,237[G]
Total, Training Programs	**$38,291**	**$39,048**	**$39,107**	**$39,506**	**$43,999[A]**	**$45,365[B]**	**$46,267[C]**	**$43,388[D]**	**$47,284[E]**	**$47,071[F]**	**$47,504[G]**

* Stipend increase occurred in FY 1989 and 1991.

[A] Excludes assessment of $444,740.

[B] Excludes assessment of $405,800.

[C] Excludes assessment of $466,000.

[D] Excludes assessment of $888,000.

[E] Excludes assessment of $864,000.

[F] Excludes assessment of $964,000.

[G] Excludes assessment of $982,000.

Full-Time Training Positions* by Activity: Fiscal Years 1986-96

(Number of Positions)

	Fiscal Year										
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Fellowship Programs											
Predoctoral Fellowship Award for Minority Students (F31)	—	—	—	—	—	—	3	4	7	13	21
Individual NRSA (F32)	177	182	210	184	206	191	209	200	229	222	220
Senior Fellowships NRSA (F33)	3	5	1	3	5	6	4	4	4	4	7
Minority Access to Research Careers (MARC) Fellowships NRSA (F34)	1	1	2	—	—	—	—	—	—	—	—
Intramural NRSA (F35)	7	5	5	1	3	4	5	3	2	2	—
Subtotal, Fellowships	188	193	218	188	214	201	221	211	242	241	248
Graduate Training Programs											
Institutional NRSA (T32)	1,270	1,304	1,278	1,257	1,205	1,218	1,240	1,124	1,237	1,201	1,216
Minority Institutional NRSA (T32)	4	16	18	30	21	19	24	1	30	47	30
Minority Summer Hypertension NRSA (T34, T35)	33	23	6	5	—	—	—	—	—	—	—
Minority Summer Pulmonary NRSA (T34, T35)	2	3	3	—	—	—	—	—	—	—	—
Off-Quarter Professional Student Training NRSA (T34, T35)	136	127	132	148	79	103	102	181	100	76	78
Minority Access to Research Careers (MARC) (T36)	—	—	—	—	—	(4)	(4)	(4)	(2)	(2)	(2)
Short-Term Training for Minority Students (T35M)	—	—	—	—	—	26	53	40	102	125	113
Subtotal, Training Grants	1,445	1,473	1,437	1,440	1,305	1,366	1,419	1,346	1,469	1,449	1,437
Total, Training Programs	**1,633**	**1,666**	**1,655**	**1,628**	**1,519**	**1,567**	**1,640**	**1,557**	**1,711**	**1,690**	**1,685**

* Recommended positions.

NHLBI Research Career Programs: Fiscal Years 1986-96

(Number of Awards)

Program	Fiscal Year 1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Special Emphasis Research Career Award (K01)*	1	—	—	—	—	—	—	—	—	—	—
Research Scientist Development Award (K02)	—	—	—	—	—	—	—	—	—	—	3
Research Career Development Award (K04)	113	103	103	92	74	65	50	40	34	30	25
Research Career Award (K06)	15	11	11	11	9	8	7	6	3	3	3
Preventive Cardiology Academic Award (K07)	18	25	20	22	22	23	18	14	11	7	—
Pulmonary Academic Award (K07)	8	4	—	—	—	—	—	—	—	—	—
Preventive Pulmonary Academic Award (K07)	—	5	8	12	16	20	14	11	8	4	—
Transfusion Medicine Academic Award (K07)	21	25	23	20	18	18	14	12	9	5	2
Systemic Pulmonary and Vascular Diseases Academic Award (K07)	—	—	—	—	—	2	6	11	11	15	11
Asthma Academic Award (K07)	—	—	—	—	—	—	—	3	6	9	9
Tuberculosis Academic Award (K07)	—	—	—	—	—	—	—	6	12	15	19
Sleep Academic Award (K07)	—	—	—	—	—	—	—	—	—	—	8
Pulmonary Faculty Development Award (K08)	1	—	—	—	—	—	—	—	—	—	—
Clinical Investigator Award(K08)	140	157	146	135	141	137	152	180	208	222	254
Physician Scientist Award (K11)	45	59	74	77	90	82	79	60	46	22	12
Minority School Faculty Development Award (K14)	10	18	21	22	22	18	18	15	12	11	15
Research Development Award for Minority Faculty (K14)	—	—	—	—	—	—	—	—	13	28	36
Total	**372**	**407**	**406**	**391**	**392**	**373**	**358**	**358**	**373**	**371**	**397**

* Diabetes and heart disease.

NHLBI Research Career Programs Obligations: Fiscal Years 1986-96

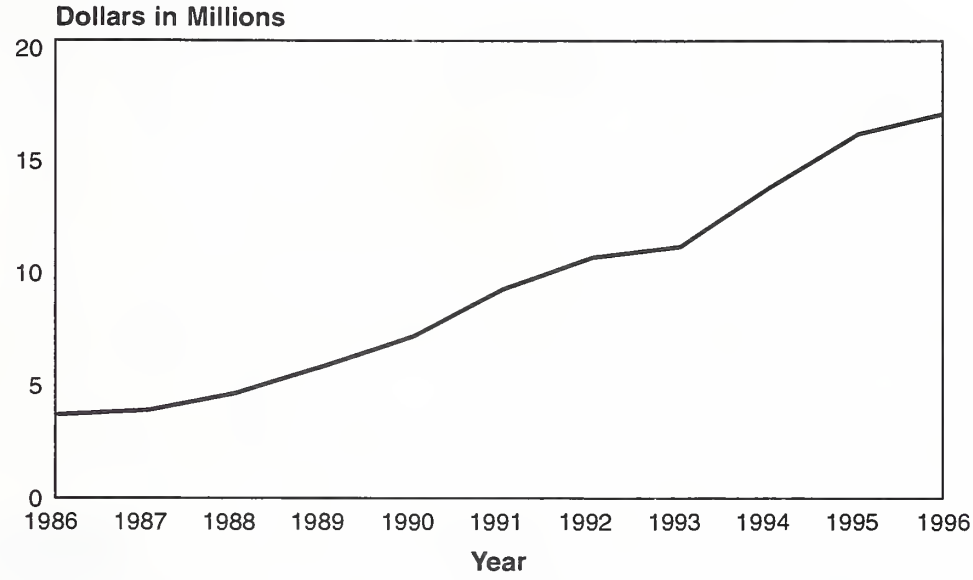
(Dollars in Thousands)

Program	Fiscal Year 1986	1987	1988	1989	1990	1991*	1992	1993	1994	1995	1996
Special Emphasis Research Career Award (K01)†	$ 73	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —
Research Scientist Development Award (K02)	—	—	—	—	—	—	—	—	—	—	207
Research Career Development Award (K04)	5,914	5,377	5,376	4,859	4,609	4,279	3,221	2,595	2,224	2,006	1,693
Research Career Award (K06)	469	363	364	331	303	270	239	194	102	104	105
Preventive Cardiology Academic Award (K07)	1,962	2,805	2,303	2,618	2,526	2,921	2,376	1,801	1,397	957	—
Pulmonary Academic Award (K07)	531	309	—	—	—	—	—	—	—	—	—
Preventive Pulmonary Academic Award (K07)	—	422	663	984	1,301	1,851	1,332	1,040	726	309	—
Transfusion Medicine Academic Award (K07)	1,584	1,953	1,916	1,719	1,590	1,658	1,452	1,155	868	485	326
Systemic Pulmonary and Vascular Diseases Academic Award (K07)	—	—	—	—	—	242	894	1,820	1,863	2,295	1,715
Asthma Academic Award (K07)	—	—	—	—	—	—	—	233	502	749	740
Tuberculosis Academic Award (K07)	—	—	—	—	—	—	—	454	906	1,155	1,496
Sleep Academic Award (K07)	—	—	—	—	—	—	—	—	—	—	699
Pulmonary Faculty Development Award (K08)	53	—	—	—	—	—	—	—	—	—	—
Clinical Investigator Award (K08)	8,731	9,766	8,913	8,445	8,860	10,370	11,733	14,125	16,635	18,090	21,093
Physician Scientist Award (K11)	3,059	4,074	5,146	5,328	6,376	6,651	6,598	5,110	3,993	1,903	1,023
Minority School Faculty Development Award (K14)	558	1,012	1,256	1,280	1,334	1,226	1,265	1,081	893	810	1,158
Research Development Award for Minority Faculty (K14)	—	—	—	—	—	—	—	—	1,289	2,812	3,607
Total	**$22,934**	**$26,081**	**$25,937**	**$25,564**	**$26,899**	**$29,468**	**$29,110**	**$29,608**	**$31,398**	**$31,675**	**$33,862**

* Salary ceiling on Research Career Awards increased from $40,000 to $50,000.

† Diabetes and heart disease.

NHLBI Minority Biomedical Research Training, Career Development, and Research Supplements Program Obligations: Fiscal Years 1986-96



NHLBI Minority Biomedical Research Training, Career Development, and Research Supplements Program Obligations: Fiscal Years 1986-96

(Dollars in Thousands)

Program	Fiscal Year 1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Minority Biomedical Research Support (MBRS)	$2,354	$2,241	$2,416	$2,368	$2,418	$2,561	$2,672	$2,540	$2,433	$2,313	$2,503
Minority Access to Research Careers (MARC)	42	33	67	23	19	—	—	—	—	—	5
Minority Hypertension Research Development Summer Program	598	320	126	80	—	—	—	—	—	—	—
Minority Pulmonary Research Development Summer Program	28	2	25	—	—	—	—	—	—	—	—
Minority Institutional Research Training Program	115	283	288	348	398	567	684	608	735	982	679
Minority School Faculty Development Award	558	1,012	1,256	1,280	1,334	1,226	1,265	1,081	893	810	1,158
Research Development Award for Minority Faculty	—	—	—	—	—	—	—	—	1,289	2,812	3,607
Minority Research Supplements Programs	—	—	485	1,763	3,059	4,596	5,367	6,273	6,754	7,264	6,714
Reentry Supplements	—	—	—	—	—	—	—	—	—	—	140
MARC Summer Research Training Program	—	—	—	25	34	32	20	48	31	28	32
Short-Term Training for Minority Students	—	—	—	—	—	339	717	573	1,616	1,760	1,834
Minority Predoctoral Fellowship	—	—	—	—	—	—	55	114	199	304	551
Total Minority Programs	**$3,695**	**$3,891**	**$4,663**	**$5,887**	**$7,262**	**$9,321**	**$10,780**	**$11,237**	**$13,950**	**$16,273**	**$17,223**

NHLBI Research Supplements Program for Underrepresented Minorities by Award Type, Fiscal Years 1986-96

(Number of Awards)

Award Type	Fiscal Year 1986-87	1988	1989	1990	1991	1992	1993	1994	1995	1996
Investigator	—	12	33	50	54	45	51	46	49	42
Postdoctoral	—	—	—	—	9	25	29	31	39	49
Graduate	—	—	6	16	24	37	45	55	42	37
Undergraduate	—	—	4	11	16	22	20	35	27	12
High School	—	—	—	—	2	1	5	15	10	8
Reentry Supplements	—	—	—	—	—	—	—	—	—	2
Total	**—**	**12**	**43**	**77**	**105**	**130**	**150**	**182**	**167**	**150**

NHLBI Research Supplements Program Obligations for Underrepresented Minorities by Award Type, Fiscal Years 1986-96

(Dollars in Thousands)

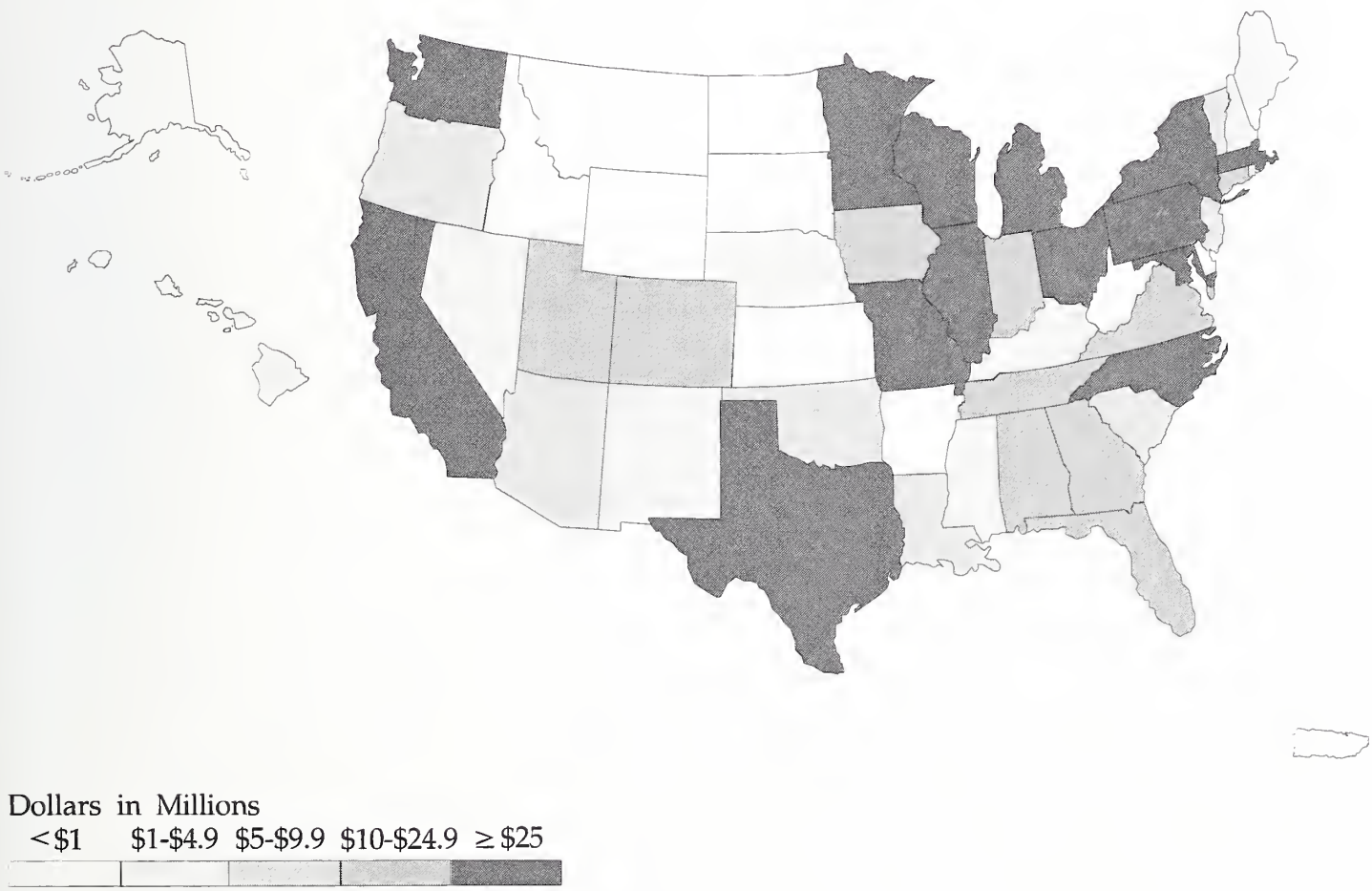
Award Type	Fiscal Year 1985-87	1988	1989	1990	1991	1992	1993	1994	1995	1996
Investigator	$ —	$485	$1,626	$2,749	$3,449	$2,959	$3,270	$2,894	$3,319	$2,552
Postdoctoral*	—	—	—	—	478	1,392	1,574	1,882	2,153	2,899
Graduate†	—	—	99	255	501	843	1,263	1,585	1,402	1,116
Undergraduate†	—	—	19	55	162	171	150	332	351	120
High School*	—	—	—	—	6	3	16	61	40	27
Reentry Supplements	—	—	—	—	—	—	—	—	—	140
Total	**$ —**	**$485**	**$1,744**	**$3,059**	**$4,596**	**$5,368**	**$6,273**	**$6,754**	**$7,265**	**$6,854**

* Implemented in FY 1991.

† Implemented in FY 1989.

13. Geographic Distribution of Awards: Fiscal Year 1996

Geographic Distribution of Awards by State: Fiscal Year 1996



Geographic Distribution of Awards by State or Country: Fiscal Year 1996

Institution	Totals		Research Grants		Research Training and Development		Contracts	
	No.	Dol.	No.	Dol.	No.	Dol.	No.	Dol.
Alabama								
Alabama State University	0	$ 126,908	0	$ 126,908	0	$ 0	0	$ 0
Atherotech, Inc.	1	433,434	1	433,434	0	0	0	0
Auburn University at Auburn	2	275,291	1	239,991	1	35,300	0	0
Tuskegee University	1	64,489	1	64,489	0	0	0	0
University of Alabama at Birmingham	74	19,262,316	58	15,063,666	10	1,106,536	6	3,092,114
University of Alabama in Tuscaloosa	1	$16,474	1	16,474	0	0	0	0
University of South Alabama	9	2,586,958	9	2,586,958	0	0	0	0
Total, Alabama	**88**	**22,765,870**	**71**	**18,531,920**	**11**	**1,141,836**	**6**	**3,092,114**
Arizona								
Arizona State University	1	413,620	1	$413,620	0	0	0	0
Gila River Indian Community Council	1	412,109	1	412,109	0	0	0	0
Materials and Electrochemical Research (MER)	1	99,995	1	99,995	0	0	0	0
Nanomaterials Research Corporation	1	100,000	1	100,000	0	0	0	0
Northern Arizona University	0	32,676	0	32,676	0	0	0	0
St. Joseph's Hospital/Medical Center, Phoenix	1	229,315	1	229,315	0	0	0	0
University of Arizona	20	6,966,033	18	6,685,022	2	281,011	0	0
Total, Arizona	**25**	**8,253,748**	**23**	**7,972,737**	**2**	**281,011**	**0**	**0**
Arkansas								
University of Arkansas Medical Sciences, Little Rock	4	586,052	4	586,052	0	0	0	0
Total, Arkansas	**4**	**586,052**	**4**	**586,052**	**0**	**0**	**0**	**0**
California								
Aegis Medical Technologies, Inc.	1	76,250	1	76,250	0	0	0	0
American National Red Cross, Los Angeles	1	393,316	0	0	0	0	1	393,316
Beckman Research Institute	1	337,127	1	337,127	0	0	0	0
Burnham Institute	2	333,624	1	303,724	1	29,900	0	0
California Institute of Technology	3	508,670	2	486,062	1	22,608	0	0
California Pacific Medical Center-Pacific Campus	0	109,509	0	109,509	0	0	0	0
California State University, Los Angeles	0	84,359	0	84,359	0	0	0	0
Cedars-Sinai Medical Center	4	814,733	4	814,733	0	0	0	0
Charles R. Drew University of Medicine and Science	2	954,977	1	759,292	1	195,685	0	0
Children's Hospital Medical Center Northern California, Oakland	4	725,171	2	559,238	1	25,933	1	140,000

Institution	Totals		Research Grants		Research Training and Development		Contracts	
	No.	Dol.	No.	Dol.	No.	Dol.	No.	Dol.
California (continued)								
Children's Hospital of Los Angeles	4	1,628,901	4	1,628,901	0	0	0	0
Children's Hospital of Orange County	2	155,357	0	0	0	0	2	155,357
City of Hope National Medical Center	2	590,883	2	590,883	0	0	0	0
Clonetics Corporation	1	159,455	1	159,455	0	0	0	0
Cypros Pharmaceutical Corporation	1	100,000	1	100,000	0	0	0	0
Energy Life Systems Corporation	1	99,996	1	99,996	0	0	0	0
Gen-Probe, Inc.	1	3,549,261	0	0	0	0	1	3,549,261
Genelabs Technologies, Inc.	1	93,852	1	93,852	0	0	0	0
Genetronics, Inc.	1	95,468	1	95,468	0	0	0	0
Genpharm International, Inc	1	100,000	1	100,000	0	0	0	0
Harbor-UCLA Research and Educational Institute	9	1,636,065	9	1,636,065	0	0	0	0
Individual Award—Wampler, Richard K.	1	99,328	1	99,328	0	0	0	0
Interactive Medical Technologies, Ltd.	1	98,405	1	98,405	0	0	0	0
Irwin Memorial Blood Centers	1	1,175,892	0	0	0	0	1	1,175,892
J. David Gladstone Institutes	5	4,560,108	5	4,560,108	0	0	0	0
Kaiser Foundation Hospitals	1	347,486	1	347,486	0	0	0	0
Kaiser Foundation Research Institute	7	2,834,560	6	2,171,010	0	0	1	663,550
Konigsberg Instruments	1	541,570	1	541,570	0	0	0	0
Loma Linda University	3	552,768	3	552,768	0	0	0	0
Medicalworks	1	477,080	1	477,080	0	0	0	0
Megabios Corporation	1	99,999	1	99,999	0	0	0	0
Metrika Laboratories, Inc.	1	100,000	1	100,000	0	0	0	0
Nimbus, Inc.	4	2,577,594	3	862,209	0	0	1	1,715,385
Northern California Institute of Research and Education	3	365,354	3	365,354	0	0	0	0
Palo Alto Institute for Research and Education	1	145,520	1	145,520	0	0	0	0
Palo Alto Medical Foundation Research Institute	2	489,129	2	489,129	0	0	0	0
Polymer Technology Group, Inc.	2	275,544	2	275,544	0	0	0	0
Rasor Associates	2	199,007	2	199,007	0	0	0	0
Salk Institute for Biological Studies	2	584,643	2	584,643	0	0	0	0
San Diego State University	8	3,715,690	8	3,715,690	0	0	0	0
Scripps Research Institute	42	13,297,880	35	12,966,235	7	331,645	0	0
Soane Biosciences, Inc.	1	100,000	1	100,000	0	0	0	0
Sri International	3	1,600,596	3	1,600,596	0	0	0	0
Stanford University	38	9,978,278	26	8,502,144	11	895,298	1	580,836
Steritech, Inc.	2	651,193	2	651,193	0	0	0	0
Synzyme Technology, Inc.	1	100,000	1	100,000	0	0	0	0

Institution	Totals		Research Grants		Research Training and Development		Contracts	
	No.	Dol.	No.	Dol.	No.	Dol.	No.	Dol.
California (continued)								
Telios Pharmaceuticals, Inc.	1	95,946	1	95,946	0	0	0	0
U.S. Department of Veterans Affairs Medical Center-Palo Alto	1	3,200,000	0	0	0	0	1	3,200,000
University of California-Lawrence Berkeley Laboratory	7	3,433,480	6	3,265,978	1	167,502	0	0
University of California, Berkeley	4	1,496,932	3	1,306,150	1	190,782	0	0
University of California, Davis	32	7,423,563	26	6,155,404	5	340,460	1	927,699
University of California, Irvine	11	1,714,216	8	1,622,620	2	39,908	1	51,688
University of California, Los Angeles	43	14,578,726	39	13,437,552	1	28,600	3	1,112,574
University of California, Riverside	1	254,753	1	254,753	0	0	0	0
University of California, San Diego	68	25,657,754	55	22,653,686	11	1,779,967	2	1,224,101
University of California, San Francisco	86	31,666,013	71	29,749,808	12	1,032,801	3	883,404
University of California, Santa Barbara	2	374,383	2	374,383	0	0	0	0
University of California, Santa Cruz	0	5,000	0	0	0	5,000	0	0
University of Southern California	26	8,434,441	25	8,410,741	1	23,700	0	0
Veterans Medical Research Foundation at San Diego	1	234,675	1	234,675	0	0	0	0
Vivorx Pharmaceuticals, Inc.	1	99,250	1	99,250	0	0	0	0
Total, California	**460**	**156,183,730**	**384**	**135,300,878**	**56**	**5,109,789**	**20**	**15,773,063**
Colorado								
Children's Hospital, Denver	1	68,662	1	68,662	0	0	0	0
Colorado State University	3	517,311	2	488,711	1	28,600	0	0
Displaytech, Inc.	1	369,650	1	369,650	0	0	0	0
National Jewish Center for Immunology/Respiratory Medicine	21	9,665,940	17	7,858,743	2	216,776	2	1,590,421
RVision Corporation	1	98,849	1	98,849	0	0	0	0
University of Colorado at Boulder	5	898,978	4	764,632	1	134,346	0	0
University of Colorado Health Sciences Center	32	8,249,889	26	7,207,244	5	651,654	1	390,991
Total, Colorado	**64**	**19,869,279**	**52**	**16,856,491**	**9**	**1,031,376**	**3**	**1,981,412**
Connecticut								
Alexion Pharmaceuticals, Inc.	1	265,025	1	265,025	0	0	0	0
Energy Research Corporation	1	304,935	1	304,935	0	0	0	0
Hartford Hospital	1	70,584	0	0	0	0	1	70,584

Institution	Totals		Research Grants		Research Training and Development		Contracts	
	No.	Dol.	No.	Dol.	No.	Dol.	No.	Dol.
Connecticut (continued)								
Icthyox, Inc.	1	76,153	1	76,153	0	0	0	0
John B. Pierce Laboratory, Inc.	6	1,253,560	6	1,253,560	0	0	0	0
University of Connecticut Health Center	5	963,561	5	963,561	0	0	0	0
University of Connecticut, Storrs	1	112,202	1	112,202	0	0	0	0
Yale University	55	12,761,396	45	10,839,879	9	937,064	1	984,453
Total, Connecticut	**71**	**15,807,416**	**60**	**13,815,315**	**9**	**937,064**	**2**	**1,055,037**
Delaware								
Compact Membrane Systems, Inc.	2	447,998	2	447,998	0	0	0	0
University of Delaware	1	168,394	1	168,394	0	0	0	0
Total, Delaware	**3**	**616,392**	**3**	**616,392**	**0**	**0**	**0**	**0**
District of Columbia								
American National Red Cross	17	4,962,604	15	4,602,778	1	160,818	1	199,008
Children's National Medical Center	2	631,769	2	631,769	0	0	0	0
Children's Research Institute	1	480,027	1	480,027	0	0	0	0
George Washington University	4	4,534,943	2	567,001	0	0	2	3,967,942
Georgetown University	22	5,144,899	17	3,775,634	1	32,500	4	1,336,765
Howard University	4	1,426,772	3	1,322,321	1	104,451	0	0
Medlantic Research Institute	2	821,763	1	750,586	0	0	1	71,177
U.S. Armed Forces Institute of Pathology	1	84,834	0	0	0	0	1	84,834
U.S. Department of Health and Human Services	1	15,000	0	0	0	0	1	15,000
U.S. Department of Veterans Affairs Medical Center, Washington, DC	1	85,590	0	0	0	0	1	85,590
U.S. National Aeronautics and Space Administration	1	20,000	0	0	0	0	1	20,000
Total, District of Columbia	**56**	**18,208,201**	**41**	**12,130,116**	**3**	**297,769**	**12**	**5,780,316**
Florida								
Bethune-Cookman College	0	198,894	0	198,894	0	0	0	0
Florida Agricultural and Mechanical University	1	53,780	1	50,000	0	3,780	0	0
Mt. Sinai Medical Center, Miami Beach	1	1,198,793	1	1,198,793	0	0	0	0
North American Biologicals, Inc.	1	705,620	0	0	0	0	1	705,620
Schwartz Electro-Optics, Inc.	1	99,835	1	99,835	0	0	0	0
University of Florida	23	4,299,403	20	3,812,583	2	118,066	1	368,754
University of Miami	9	1,817,367	8	1,602,717	1	214,650	0	0
University of Miami, Coral Gables	4	2,666,855	2	1,785,202	1	214,693	1	666,960
University of South Florida	1	192,438	1	192,438	0	0	0	0
Total, Florida	**41**	**11,232,985**	**34**	**8,940,462**	**4**	**551,189**	**3**	**1,741,334**

Institution	Totals		Research Grants		Research Training and Development		Contracts	
	No.	Dol.	No.	Dol.	No.	Dol.	No.	Dol.
Georgia								
Cryolife, Inc.	1	99,484	1	99,484	0	0	0	0
Emory University	37	10,295,294	32	9,955,672	5	339,622	0	0
Georgia Institute of Technology	1	167,235	1	167,235	0	0	0	0
Georgia Southern University	1	31,200	0	0	1	31,200	0	0
Georgia State University	1	198,656	1	198,656	0	0	0	0
Medical College of Georgia	12	4,955,992	12	4,955,992	0	0	0	0
Morehouse School of Medicine	3	457,497	3	457,497	0	0	0	0
Novoste Corporation	1	99,840	1	99,840	0	0	0	0
Savannah State College	1	70,547	1	70,547	0	0	0	0
Simutech	1	68,000	1	68,000	0	0	0	0
U.S. Centers for Disease Control and Prevention	2	666,615	0	0	0	0	2	666,615
University of Georgia	3	407,981	2	372,681	1	35,300	0	0
Total, Georgia	**64**	**17,518,341**	**55**	**16,445,604**	**7**	**406,122**	**2**	**666,615**
Hawaii								
Kuakini Medical Center	1	631,850	0	0	0	0	1	631,850
University of Hawaii at Manoa	2	980,815	2	980,815	0	0	0	0
Total, Hawaii	**3**	**1,612,665**	**2**	**980,815**	**0**	**0**	**1**	**631,850**
Illinois								
American Dental Association Health Foundation	1	219,893	1	219,893	0	0	0	0
Children's Memorial Hospital, Chicago	1	167,779	1	167,779	0	0	0	0
De Paul University	1	15,282	0	0	1	15,282	0	
Finch University of Health Science/Chicago Medical School	1	383,905	1	383,905	0	0	0	0
Humana Hospital-Michael Reese	1	239,127	1	239,127	0	0	0	0
Loyola University Medical Center	16	3,272,607	14	3,213,607	2	59,000	0	0
Northwestern University, Chicago	5	1,240,343	5	1,240,343	0	0	0	0
Northwestern University, Evanston	21	5,297,937	20	4,801,087	0	0	1	496,850
Pulmonix, Inc.	1	99,896	1	99,896	0	0	0	0
Rush-Presbyterian-St. Luke's Medical Center	8	2,069,908	7	1,403,593	0	0	1	666,315
Southern Illinois University School of Medicine	3	374,980	3	374,980	0	0	0	0
Thermogen, Inc.	1	375,113	1	375,113	0	0	0	0
University of Chicago	35	13,738,218	29	12,453,647	6	1,284,571	0	0
University of Illinois at Chicago	22	4,682,211	17	4,123,741	5	558,470	0	0
University of Illinois at Urbana-Champaign	7	1,360,819	7	1,360,819	0	0	0	0
Total, Illinois	**124**	**33,538,018**	**108**	**30,457,530**	**14**	**1,917,323**	**2**	**1,163,165**

Institution	Totals		Research Grants		Research Training and Development		Contracts	
	No.	Dol.	No.	Dol.	No.	Dol.	No.	Dol.
Indiana								
GDS Technology, Inc.	1	76,974	1	76,974	0	0	0	0
Indiana University-Purdue University at Indianapolis	42	10,895,174	37	10,428,001	4	451,889	1	15,284
Indiana University at Bloomington	1	75,373	1	75,373	0	0	0	0
Methodist Hospital of Indiana, Inc.	1	20,730	0	0	1	20,730	0	0
Purdue University, West Lafayette	5	691,202	5	691,202	0	0	0	0
University of Notre Dame	3	875,687	3	875,687	0	0	0	0
Total, Indiana	**53**	**12,635,140**	**47**	**12,147,237**	**5**	**472,619**	**1**	**15,284**
Iowa								
Maharishi University of Management	1	403,195	1	403,195	0	0	0	0
University of Iowa	53	16,879,283	43	15,259,347	9	1,400,510	1	219,426
Total, Iowa	**54**	**17,282,478**	**44**	**15,662,542**	**9**	**1,400,510**	**1**	**219,426**
Kansas								
Kansas State University	4	371,342	4	371,342	0	0	0	0
University of Kansas, Lawrence	1	244,484	1	244,484	0	0	0	0
University of Kansas Medical Center	3	370,076	3	370,076	0	0	0	0
Total, Kansas	**8**	**985,902**	**8**	**985,902**	**0**	**0**	**0**	**0**
Kentucky								
University of Kentucky	17	3,325,395	16	2,863,170	0	0	1	462,225
University of Louisville	5	927,462	4	911,923	1	15,539	0	0
Total, Kentucky	**22**	**4,252,857**	**20**	**3,775,093**	**1**	**15,539**	**1**	**462,225**
Louisiana								
Children's Hospital, New Orleans	1	195,317	1	195,317	0	0	0	0
Louisiana State University Medical Center, New Orleans	7	895,752	7	895,752	0	0	0	0
Louisiana State University Medical Center, Shreveport	8	992,548	7	957,248	1	35,300	0	0
Pennington Biomedical Research Center	2	131,418	2	131,418	0	0	0	0
Tulane University of Louisiana	17	3,606,802	14	3,523,997	3	82,805	0	0
Total, Louisiana	**35**	**5,821,837**	**31**	**5,703,732**	**4**	**118,105**	**0**	**0**
Maine								
Jackson Laboratory	5	1,295,803	5	1,295,803	0	0	0	0
Total, Maine	**5**	**1,295,803**	**5**	**1,295,803**	**0**	**0**	**0**	**0**
Maryland								
American Physiological Society	1	15,000	1	15,000	0	0	0	0
American Society for Cell Biology	0	2,000	0	2,000	0	0	0	0

Institution	Totals		Research Grants		Research Training and Development		Contracts	
	No.	Dol.	No.	Dol.	No.	Dol.	No.	Dol.
Maryland (continued)								
American Type Culture Collection	1	151,365	0	0	0	0	1	151,365
Clinical Trials and Surveys Corporation	2	950,343	0	0	0	0	2	950,343
Emmes Corporation	2	623,018	0	0	0	0	2	623,018
Federation of American Societies for Experimental Biology	1	12,500	1	12,500	0	0	0	0
Henry M. Jackson Foundation for the Advancement of Military Medicine	3	1,071,276	3	1,071,276	0	0	0	0
HT Medical, Inc.	1	399,317	1	399,317	0	0	0	0
The Johns Hopkins University	126	35,403,581	94	27,751,241	24	2,415,916	8	5,236,424
Maryland Medical Research Institute	4	2,890,972	2	1,269,444	0	0	2	1,621,528
Molecular Tool, Inc.	1	96,872	1	96,872	0	0	0	0
Ogden Bioservices Corporation	1	495,165	0	0	0	0	1	495,165
Proed, Inc.	1	99,510	1	99,510	0	0	0	0
Prospect Associates, Ltd.	1	641,710	0	0	0	0	1	641,710
ROW Sciences, Inc.	1	3,990,631	0	0	0	0	1	3,990,631
Sinai Hospital of Baltimore	1	78,678	1	78,678	0	0	0	0
U.S. Agricultural Research Center	2	275,000	0	0	0	0	2	275,000
U.S. National Center for Research Resources	1	93,000	0	0	0	0	1	93,000
U.S. PHS Public Advisory Groups	0	1,723,000	0	1,723,000	0	0	0	0
University of Maryland Baltimore Professional School	27	6,911,228	25	6,339,842	1	77,812	1	493,574
Westat, Inc.	1	740,078	1	740,078	0	0	0	0
Total, Maryland	**178**	**56,664,244**	**131**	**39,598,758**	**25**	**2,493,728**	**22**	**14,571,758**
Massachusetts								
Abiomed, Inc.	3	6,694,793	1	234,419	0	0	2	6,460,374
Baystate Medical Center	1	118,108	1	118,108	0	0	0	0
Beth Israel Hospital, Boston	22	5,008,947	21	4,758,484	0	0	1	250,463
Biomechanics Institute	1	92,780	1	92,780	0	0	0	0
Bion, Inc.	1	99,979	1	99,979	0	0	0	0
Boston Biomedical Research Institute	4	990,414	4	990,414	0	0	0	0
Boston City Hospital	1	1,756,977	1	1,756,977	0	0	0	0
Boston Health and Hospitals Department	1	96,273	1	96,273	0	0	0	0
Boston University	57	23,206,002	51	20,173,594	5	698,408	1	2,334,000
Boston University Medical Center Hospital	12	2,877,571	12	2,877,571	0	0	0	0
Brandeis University	3	838,474	3	878,474	0	0	0	0
Brigham and Women's Hospital	106	32,061,562	83	28,935,356	22	2,254,076	1	872,130
Candela Laser Corporation	1	99,308	1	99,308	0	0	0	0
Cape Cod Research, Inc.	1	99,648	1	99,648	0	0	0	0

Institution	Totals		Research Grants		Research Training and Development		Contracts	
	No.	Dol.	No.	Dol.	No.	Dol.	No.	Dol.
Massachusetts (continued)								
Cardiotech International, Inc. .	2	420,206	2	420,206	0	0	0	0
CBR Laboratories, Inc.	1	364,000	1	364,000	0	0	0	0
Center for Blood Research	8	6,566,932	7	6,543,232	1	23,700	0	0
Children's Hospital, Boston . . .	39	8,588,671	34	8,063,575	5	525,096	0	0
Cynosure, Inc.	2	493,583	2	493,583	0	0	0	0
Dana-Farber Cancer Institute. .	10	1,680,642	8	1,619,886	1	31,200	1	29,556
E. Benson Hood Laboratories, Inc.	1	81,079	1	81,079	0	0	0	0
Engineering Partnership, Ltd. .	1	97,892	1	97,892	0	0	0	0
Giner, Inc.	2	374,735	2	374,735	0	0	0	0
Harvard University, Boston . . .	32	10,318,134	24	9,368,100	8	950,034	0	0
Harvard University, Cambridge	3	725,578	2	695,678	1	29,900	0	0
Institute/Study-Treatment/ Cardiovascular Diseases	1	163,729	1	163,729	0	0	0	0
Ion Optics, Inc.	1	99,150	1	99,150	0	0	0	0
Mallory Institute of Pathology.	1	296,080	1	296,080	0	0	0	0
Massachusetts General Hospital	44	10,522,637	36	10,046,579	7	448,715	1	27,343
Massachusetts Institute of Technology	11	4,743,405	9	4,690,897	2	52,508	0	0
Matrix Engineering.	1	100,000	1	100,000	0	0	0	0
Microwave Medical Systems, Inc.	2	471,951	2	471,951	0	0	0	0
New England Deaconess Hospital.	15	5,785,849	14	5,563,285	1	222,564	0	0
New England Medical Center Hospitals, Inc.	21	5,767,209	18	5,308,222	3	458,987	0	0
New England Research Institutes, Inc.	5	2,864,431	4	1,842,538	0	0	1	1,021,893
Northeastern University.	2	378,345	2	378,345	0	0	0	0
One Cell Systems, Inc.	1	183,728	1	183,728	0	0	0	0
Precision Innovative Technologies, Inc.	1	80,390	1	80,390	0	0	0	0
PRP, Inc.	1	370,043	1	370,043	0	0	0	0
Radiation Monitoring Devices, Inc.	1	99,998	1	99,998	0	0	0	0
Reid Laboratories	1	99,457	1	99,457	0	0	0	0
Science Research Laboratory, Inc.	1	260,489	1	260,489	0	0	0	0
Scriptgen Pharmaceuticals, Inc.	1	100,000	1	100,000	0	0	0	0
Spire Corporation	1	376,752	1	376,752	0	0	0	0
St. Elizabeth's Medical Center of Boston.	9	2,920,908	9	2,920,908	0	0	0	0
T Cell Sciences, Inc.	1	100,000	1	100,000	0	0	0	0
Tufts University, Boston	8	1,321,661	6	1,253,135	2	68,526	0	0
University of Massachusetts, Lowell	2	275,753	2	275,753	0	0	0	0
University of Massachusetts Medical School	18	7,667,797	17	7,631,758	1	36,039	0	0
Warren E. Collins, Inc.	1	299,021	1	299,021	0	0	0	0
Whalen Biomedical, Inc.	1	950,913	0	0	0	0	1	950,913

Institution	Totals		Research Grants		Research Training and Development		Contracts	
	No.	Dol.	No.	Dol.	No.	Dol.	No.	Dol.
Massachusetts (continued)								
Whitehead Institute for Biomedical Research	2	304,646	1	282,038	1	22,608	0	0
Worcester Polytechnical Institute	0	81,463	0	81,463	0	0	0	0
Total, Massachusetts	**469**	**150,438,093**	**400**	**132,669,060**	**60**	**5,822,361**	**9**	**11,946,672**
Michigan								
American National Red Cross, Southeast Michigan	1	116,856	0	0	0	0	1	116,856
Case Western Reserve University, Henry Ford Health Science Center	10	3,297,932	9	3,099,791	0	0	1	198,141
Michigan State University	7	1,478,743	7	1,478,743	0	0	0	0
Parke Davis Pharmaceutical Research Division	1	107,623	1	107,623	0	0	0	0
Thero Two-X, Inc.	1	97,951	1	97,951	0	0	0	0
Thromgen, Inc.	1	99,975	1	99,975	0	0	0	0
University of Michigan at Ann Arbor	77	20,871,376	64	18,942,035	11	1,012,060	2	917,281
Wayne State University	22	3,374,974	19	3,311,187	2	57,297	1	6,490
Western Michigan University	1	117,469	1	117,469	0	0	0	0
Total, Michigan	**121**	**29,562,899**	**103**	**27,254,774**	**13**	**1,069,357**	**5**	**1,238,768**
Minnesota								
Brimson Laboratories	1	99,976	1	99,976	0	0	0	0
BSI Corporation	1	309,180	1	309,180	0	0	0	0
Data Sciences International, Inc.	1	91,917	1	91,917	0	0	0	0
H.V. Setty Enterprises, Inc.	1	99,488	1	99,488	0	0	0	0
Mayo Foundation	29	5,693,151	25	5,424,412	4	268,739	0	0
National Reparative Medicine Foundation	1	214,858	1	214,858	0	0	0	0
St. Olaf College	1	129,740	1	129,740	0	0	0	0
University of Minnesota, Twin Cities	69	20,093,609	56	17,519,740	7	724,040	6	1,849,829
Total, Minnesota	**104**	**26,731,919**	**87**	**23,889,311**	**11**	**992,779**	**6**	**1,849,829**
Mississippi								
Tougaloo College	0	7,560	0	0	0	7,560	0	0
University of Mississippi Medical Center	10	2,907,262	6	2,451,463	3	51,033	1	404,766
Total, Mississippi	**10**	**2,914,822**	**6**	**2,451,463**	**3**	**58,593**	**1**	**404,766**
Missouri								
Barnes-Jewish Hospital	3	1,727,080	3	1,727,080	0	0	0	0
Jewish Hospital of St. Louis	13	1,941,235	11	1,877,335	2	63,900	0	0
St. Louis University	16	2,657,807	16	2,657,807	0	0	0	0
University of Missouri, Columbia	14	2,842,101	12	2,661,034	2	181,067	0	0
University of Missouri at Kansas City	2	177,749	2	177,749	0	0	0	0
Washington University	78	21,481,120	65	18,525,496	10	1,533,356	3	1,422,268
Total, Missouri	**126**	**30,827,092**	**109**	**27,626,501**	**14**	**1,778,323**	**3**	**1,422,268**

Institution	Totals		Research Grants		Research Training and Development		Contracts	
	No.	Dol.	No.	Dol.	No.	Dol.	No.	Dol.
Montana								
McLaughlin Research Institute for Biomedical Sciences	1	264,218	1	264,218	0	0	0	0
Montana State University	0	19,976	0	19,976	0	0	0	0
Yellowstone Environmental Science	1	345,434	1	345,434	0	0	0	0
Total, Montana	**2**	**629,628**	**2**	**629,628**	**0**	**0**	**0**	**0**
Nebraska								
Creighton University	3	230,916	2	195,259	1	35,657	0	0
University of Nebraska Medical Center	9	1,378,315	9	1,378,315	0	0	0	0
Total, Nebraska	**12**	**1,609,231**	**11**	**1,573,574**	**1**	**35,657**	**0**	**0**
Nevada								
Sierra Biomedical Research Corporation	3	799,019	3	799,019	0	0	0	0
University of Nevada at Reno	4	834,701	4	834,701	0	0	0	0
Total, Nevada	**7**	**1,633,720**	**7**	**1,633,720**	**0**	**0**	**0**	**0**
New Hampshire								
Acuity Imaging, Inc.	1	99,990	1	99,990	0	0	0	0
Creare, Inc.	3	492,005	3	492,005	0	0	0	0
DAAT Research	1	251,609	1	251,609	0	0	0	0
Dartmouth College	12	2,175,000	9	1,953,314	3	221,686	0	0
Diatide, Inc.	1	356,236	1	356,236	0	0	0	0
Lectin Assays, Inc.	1	190,322	1	190,322	0	0	0	0
Total, New Hampshire	**19**	**3,565,162**	**16**	**3,343,476**	**3**	**221,686**	**0**	**0**
New Jersey								
AF Sammer Corporation	1	244,319	1	244,319	0	0	0	0
Echocath	1	98,000	1	98,000	0	0	0	0
Princeton University	1	23,700	0	0	1	23,700	0	0
Regen Biologics, Inc.	1	99,035	1	99,035	0	0	0	0
Rutgers State University, Newark	0	68,962	0	68,962	0	0	0	0
University of Medicine and Dentistry of New Jersey-RW Johnson Medical School	11	2,392,333	11	2,392,333	0	0	0	0
University of Medicine and Dentistry of New Jersey-School of Osteopathic Medicine	1	112,000	1	112,000	0	0	0	0
University of Medicine and Dentistry of New Jersey	14	2,473,991	12	2,430,430	1	36,364	1	7,197
Total, New Jersey	**30**	**5,512,340**	**27**	**5,445,079**	**2**	**60,064**	**1**	**7,197**
New Mexico								
Lovelace Institutes	2	212,106	1	195,058	1	17,048	0	0
New Mexico Highlands University	0	92,576	0	92,576	0	0	0	0

Institution	Totals		Research Grants		Research Training and Development		Contracts	
	No.	Dol.	No.	Dol.	No.	Dol.	No.	Dol.
New Mexico (continued)								
New Mexico State University, Las Cruces	0	3,780	0	0	0	3,780	0	0
Rhomed, Inc.	1	94,970	1	94,970	0	0	0	0
University of New Mexico, Albuquerque	11	2,702,846	7	1,785,643	3	343,651	1	573,552
Total, New Mexico	**14**	**3,106,278**	**9**	**2,168,247**	**4**	**364,479**	**1**	**573,552**
New York								
Albany Medical College of Union University	9	1,326,955	7	1,122,537	2	204,418	0	0
American Health Foundation	1	728,114	1	728,114	0	0	0	0
Anatole J. Sipin Company, Inc.	1	267,985	1	267,985	0	0	0	0
Butler Farms USA, Inc.	1	100,000	1	100,000	0	0	0	0
Circulatory Technology, Inc.	1	99,053	1	99,053	0	0	0	0
City College of New York	1	282,312	1	282,312	0	0	0	0
Columbia Presbyterian Medical Center	1	885,403	0	0	0	0	1	885,403
Columbia University, New York	51	20,936,795	47	20,399,276	4	537,519	0	0
Columbia University, Teachers College	1	632,249	1	632,249	0	0	0	0
Cornell University, Ithaca	2	340,256	1	322,427	1	17,829	0	0
Cornell University Medical Center	28	11,648,607	25	11,223,356	3	425,251	0	0
CUNY Graduate School and University Center	1	199,997	1	199,997	0	0	0	0
Health Science Center at Brooklyn	4	909,029	4	909,029	0	0	0	0
Health Science Center at Syracuse	5	2,115,444	5	2,115,444	0	0	0	0
Hunter College	0	15,656	0	15,656	0	0	0	0
Interfaith Medical Center, Brooklyn	1	236,489	0	0	0	0	1	236,489
Johnson and Johnson Clinical Diagnostics	1	1,552,739	0	0	0	0	1	1,552,739
Long Island Jewish Medical Center	1	162,169	1	162,169	0	0	0	0
Masonic Medical Research Laboratory, Inc.	1	491,261	1	491,261	0	0	0	0
Mechanical Technology, Inc.	1	99,888	1	99,888	0	0	0	0
Medelex Technology	1	100,000	1	100,000	0	0	0	0
Melville Biologics, Inc.	1	98,651	1	98,651	0	0	0	0
Mohawk Innovative Technology, Inc.	1	99,587	1	99,587	0	0	0	0
Montefiore Medical Center, Bronx	2	2,399,742	2	2,399,742	0	0	0	0
Mt. Sinai School of Medicine	22	7,844,361	15	6,035,746	4	295,256	3	1,513,359
Narrows Institute for Biomedical Research, Inc.	1	158,623	1	158,623	0	0	0	0
New York Blood Center	5	2,070,555	2	2,070,555	0	0	0	0

Institution	Totals		Research Grants		Research Training and Development		Contracts	
	No.	Dol.	No.	Dol.	No.	Dol.	No.	Dol.
New York (continued)								
New York Medical College	18	6,042,526	17	6,007,226	1	35,300	0	0
New York State Council for Mental Hygiene Planning	1	253,159	1	253,159	0	0	0	0
New York University Medical Center	14	3,333,911	13	3,145,849	1	188,062	0	0
North Shore University Hospital	1	116,640	1	116,640	0	0	0	0
Oncogene Science, Inc.	2	310,432	2	310,432	0	0	0	0
Public Health Research Institute of the City of New York	1	326,995	1	326,995	0	0	0	0
Queens College	1	252,608	1	252,608	0	0	0	0
Rockefeller University	9	3,832,338	8	3,809,730	1	22,608	0	0
Roswell Park Cancer Institute	2	463,873	2	463,873	0	0	0	0
Sloan-Kettering Institute for Cancer Research	9	1,913,901	7	1,541,376	1	23,700	1	348,825
St. Luke's-Roosevelt Institute for Health Sciences	5	1,719,834	5	1,719,834	0	0	0	0
State University of New York at Stony Brook	17	3,436,488	17	3,436,488	0	0	0	0
State University of New York at Albany	1	187,511	1	187,511	0	0	0	0
State University of New York at Buffalo	18	3,239,255	17	3,171,396	1	67,859	0	0
Syracuse University at Syracuse	1	188,242	1	188,242	0	0	0	0
Trudeau Institute, Inc.	2	666,254	2	666,254	0	0	0	0
University of Rochester	33	10,549,320	29	10,127,516	4	421,804	0	0
Vec Tec, Inc.	1	70,000	1	70,000	0	0	0	0
Vec Technologies, Inc.	0	30,000	0	30,000	0	0	0	0
Winthrop-University Hospital	1	79,110	1	79,110	0	0	0	0
Yeshiva University	14	5,094,589	11	4,755,377	3	339,212	0	0
Total, New York	**296**	**97,908,906**	**263**	**90,793,273**	**26**	**2,578,818**	**7**	**4,536,815**
North Carolina								
Axonal Information Systems (AXIS)	1	64,733	1	64,733	0	0	0	0
Biotherm, Inc.	1	541,383	1	541,383	0	0	0	0
Duke University	94	24,362,353	75	21,450,914	14	1,199,858	5	1,711,581
East Carolina University	3	642,229	3	642,229	0	0	0	0
Fayetteville State University	0	186,480	0	186,480	0	0	0	0
North Carolina Agricultural and Technological State University	0	131,787	0	125,940	0	5,847	0	0
North Carolina State University at Raleigh	5	737,393	3	673,693	2	63,700	0	0
Three-D Ultrasound, Inc.	1	80,705	1	80,705	0	0		
University of North Carolina at Chapel Hill	67	24,958,746	51	18,523,398	10	967,712	6	5,467,636
Wake Forest University	42	14,086,223	39	12,651,062	2	322,992	1	1,112,169
Winston-Salem State University	0	95,762	0	95,762	0	0	0	0
Total, North Carolina	**214**	**65,887,794**	**174**	**55,036,299**	**28**	**2,560,109**	**12**	**8,291,386**

Institution	Totals		Research Grants		Research Training and Development		Contracts	
	No.	Dol.	No.	Dol.	No.	Dol.	No.	Dol.
Ohio								
Anatrace, Inc.	1	352,459	1	352,459	0	0	0	0
Case Western Reserve University	67	18,801,163	57	16,896,704	9	1,422,385	1	482,074
Chantreat	1	99,945	1	99,945	0	0	0	0
Children's Hospital, Columbus.	1	81,039	1	81,039	0	0	0	0
Children's Hospital Medical Center, Cincinnati	23	6,869,986	20	6,615,003	3	254,983	0	0
Cleveland Clinic Foundation	34	10,098,174	27	6,303,280	3	84,800	4	3,710,094
Cleveland Medical Devices, Inc.	1	100,000	1	100,000	0	0	0	0
Isolab, Inc.	1	322,237	1	322,237	0	0	0	0
Medical College of Ohio at Toledo	4	826,716	4	826,716	0	0	0	0
Northeastern Ohio University College of Medicine	2	126,574	1	96,674	1	29,900	0	0
Ohio State University	22	4,669,494	20	4,528,776	1	33,800	1	106,918
University of Akron	1	250,867	1	250,867	0	0	0	0
University of Cincinnati	38	11,153,234	31	10,077,594	6	880,395	1	195,245
Wright State University	3	327,006	2	276,220	1	50,786	0	0
Total, Ohio	**199**	**54,078,894**	**168**	**46,827,514**	**24**	**2,757,049**	**7**	**4,494,331**
Oklahoma								
Oklahoma Blood Institute	1	254,530	0	0	0	0	1	254,530
Oklahoma Medical Research Foundation	3	1,649,001	3	1,649,001	0	0	0	0
University of Oklahoma Health Sciences Center	15	4,113,150	10	3,873,367	5	239,783	0	0
University of Oklahoma, Norman	1	81,035	1	81,035	0	0	0	0
Total, Oklahoma	**20**	**6,097,716**	**14**	**5,603,403**	**5**	**239,783**	**1**	**254,530**
Oregon								
Bend Research, Inc.	1	99,999	1	99,999	0	0	0	0
Oregon Center for Applied Science	2	430,340	2	430,340	0	0	0	0
Oregon Graduate Institute of Science and Technology	1	162,595	1	162,595	0	0	0	0
Oregon Health Sciences University	17	4,236,482	14	3,706,007	3	530,475	0	0
Oregon Regional Primate Research Center	2	484,327	2	484,327	0	0	0	0
Oregon Research Institute	2	607,963	2	607,963	0	0	0	0
Oregon State University	1	280,331	1	280,331	0	0	0	0
University of Oregon	1	281,451	1	281,451	0	0	0	0
Total, Oregon	**27**	**6,583,488**	**24**	**6,053,013**	**3**	**530,475**	**0**	**0**
Pennsylvania								
Albert Einstein Medical Center, Philadelphia	1	157,309	1	157,309	0	0	0	0
Allegheny University of Health Sciences	12	3,099,494	10	2,879,852	2	219,642	0	0

Institution	Totals		Research Grants		Research Training and Development		Contracts	
	No.	Dol.	No.	Dol.	No.	Dol.	No.	Dol.
Pennsylvania (continued)								
Allegheny-Singer Research Institute	1	325,241	0	0	0	0	1	325,241
Carnegie-Mellon University	5	1,258,069	4	1,225,569	1	32,500	0	0
Children's Hospital of Philadelphia	13	7,154,218	10	7,028,129	3	126,089	0	0
Children's Hospital of Pittsburgh	3	912,858	3	912,858	0	0	0	0
Drexel University	1	149,518	1	149,518	0	0	0	0
Fox Chase Cancer Center	1	359,397	1	359,397	0	0	0	0
Geisinger Foundation	1	222,753	0	0	0	0	1	222,753
Graduate Hospital, Philadelphia	6	1,017,138	4	959,230	2	57,908	0	0
Institute for Cancer Research	1	85,320	1	85,320	0	0	0	0
KDL Medical Technologies, Inc.	1	345,380	1	345,380	0	0	0	0
Moberg Medical, Inc.	1	97,935	1	97,935	0	0	0	0
Pennsylvania State University, Hershey Medical Center	22	10,612,251	18	5,069,612	2	62,400	2	5,480,239
Pennsylvania State University, University Park	6	1,136,600	6	1,136,600	0	0	0	0
Philadelphia College of Pharmacy and Science	1	83,159	1	83,159	0	0	0	0
Reshet, Inc.	1	353,461	1	353,461	0	0	0	0
Sparta Pharmaceuticals, Inc	1	85,435	1	85,435	0	0	0	0
Symphony Pharmaceuticals, Inc.	1	88,990	1	88,990	0	0	0	0
Temple University	21	4,401,204	18	4,066,783	3	334,421	0	0
Thomas Jefferson University	17	4,266,083	13	3,908,356	4	357,727	0	0
Transicoil, Inc.	1	1,467,689	0	0	0	0	1	1,467,689
University City Science Center	2	384,256	2	384,256	0	0	0	0
University of Pennsylvania	94	25,749,895	78	22,904,252	14	1,988,352	2	857,291
University of Pittsburgh at Pittsburgh	47	12,342,857	37	10,601,681	7	845,498	3	895,678
Weis Center for Research-Geisinger Clinic	6	802,904	4	756,596	2	46,308	0	0
Wistar Institute of Anatomy and Biology	3	610,357	3	610,357	0	0	0	0
Zynaxis, Inc.	2	441,675	2	441,675	0	0	0	0
Total, Pennsylvania	**272**	**78,011,446**	**222**	**64,691,710**	**40**	**4,070,845**	**10**	**9,248,891**
Rhode Island								
Brown University	2	204,688	1	167,274	1	37,414	0	0
Gordon Research Conferences	4	50,000	4	50,000	0	0	0	0
Memorial Hospital of Rhode Island	4	735,786	3	708,857	1	26,929	0	0
Miriam Hospital	2	570,409	1	190,015	0	0	1	380,394
National Perinatal Information Center	0	30,000	0	30,000	0	0	0	0
Rhode Island Hospital, Providence	2	218,855	2	218,855	0	0	0	0
Total, Rhode Island	**14**	**1,809,738**	**11**	**1,365,001**	**2**	**64,343**	**1**	**380,394**

Institution	Totals		Research Grants		Research Training and Development		Contracts	
	No.	Dol.	No.	Dol.	No.	Dol.	No.	Dol.
South Carolina								
Medical University of South Carolina	23	5,762,387	17	5,273,666	4	315,138	2	173,583
Richland Memorial Hospital, Columbia	1	235,587	1	235,587	0	0	0	0
University of South Carolina at Columbia	2	300,635	1	265,335	1	35,300	0	0
Total, South Carolina	**26**	**6,298,609**	**19**	**5,774,588**	**5**	**350,438**	**2**	**173,583**
South Dakota								
U.S. PHS Aberdeen Area Indian Health Service	1	448,262	1	448,262	0	0	0	0
University of South Dakota	3	214,042	2	190,863	1	23,179	0	0
Total, South Dakota	**4**	**662,304**	**3**	**639,125**	**1**	**23,179**	**0**	**0**
Tennessee								
East Tennessee State University	1	84,937	1	84,937	0	0	0	
Meharry Medical College	17	2,229,559	11	1,729,599	6	499,960	0	0
Oak Ridge Associated Universities	1	265,214	1	265,214	0	0	0	0
St. Jude Children's Research Hospital	4	1,614,361	4	1,614,361	0	0	0	0
U.S. Department of Veterans Affairs Medical Center, Memphis	1	674,000	0	0	0	0	1	674,000
University of Memphis	6	1,941,304	6	1,941,304	0	0	0	0
University of Tennessee at Memphis	18	3,239,926	15	2,942,832	3	297,094	0	0
University of Tennessee at Knoxville	2	134,962	1	99,662	1	35,300	0	0
Vanderbilt University	50	13,422,845	40	11,619,064	9	1,353,012	1	450,769
Total, Tennessee	**100**	**23,607,108**	**79**	**20,296,973**	**19**	**2,185,366**	**2**	**1,124,769**
Texas								
Baylor College of Medicine	49	17,437,900	39	15,464,645	8	717,157	2	1,256,098
Cooper Institute for Aerobics Research	1	387,051	1	387,051	0	0	0	0
Genemedicine, Inc.	1	100,000	1	100,000	0	0	0	0
Indus Instruments	1	383,444	1	383,444	0	0	0	0
Prairie View Agriculture and Mechanical University	0	153,073	0	153,073	0	0	0	0
Proportional Technologies, Inc.	4	943,676	4	943,676	0	0	0	0
Rice University	5	989,343	4	959,443	1	29,900	0	0
Southwest Foundation for Biomedical Research	8	6,477,962	7	5,108,686	0	0	1	1,369,276
Texas A&M University Health Science Center	7	1,148,036	7	1,148,036	0	0	0	0
Texas Engineering Experiment Station	7	690,142	5	632,942	2	57,200	0	0
Texas Heart Institute	1	219,895	1	219,895	0	0	0	0
Texas Southern University	4	214,379	4	214,379	0	0	0	0

Institution	Totals		Research Grants		Research Training and Development		Contracts	
	No.	Dol.	No.	Dol.	No.	Dol.	No.	Dol.
Texas (continued)								
Texas Technical University Health Sciences Center	3	226,386	2	210,933	1	15,453	0	0
University of North Texas Health Science Center	7	865,190	6	820,618	1	44,572	0	0
University of Texas at Austin	4	982,169	4	982,169	0	0	0	0
University of Texas at Dallas	1	229,272	1	229,272	0	0	0	0
University of Texas at El Paso	1	12,008	0	0	1	12,008	0	0
University of Texas Health Center at Tyler	2	292,918	2	292,918	0	0	0	0
University of Texas Health Science Center, Houston	30	28,967,912	26	8,095,279	2	157,209	2	20,715,424
University of Texas Health Science Center, San Antonio	21	4,332,962	19	3,983,705	2	349,257	0	0
University of Texas MD Anderson Cancer Center	1	291,559	1	291,559	0	0	0	0
University of Texas Medical Branch at Galveston	14	2,741,772	13	2,342,445	0	0	1	399,327
University of Texas at San Antonio	1	76,324	1	76,324	0	0	0	0
University of Texas Southwest Medical Center at Dallas	29	13,204,831	27	12,793,571	2	411,260	0	0
Total, Texas	**202**	**81,368,204**	**176**	**55,834,063**	**20**	**1,794,016**	**6**	**23,740,125**
Utah								
Axon Medical, Inc.	1	80,786	1	80,786	0	0	0	0
Brigham Young University	2	270,797	2	270,797	0	0	0	0
FFFractionation, Inc.	1	154,484	1	154,484	0	0	0	0
LDS Hospital	2	524,424	1	188,620	0	0	1	335,804
Medquest Products, Inc.	1	99,957	1	99,957	0	0	0	0
Oxygenator Technology Development, Inc.	1	113,495	1	113,495	0	0	0	0
University of Utah	56	14,132,641	50	13,676,774	6	455,867	0	0
Total, Utah	**64**	**15,376,584**	**57**	**14,584,913**	**6**	**455,867**	**1**	**335,804**
Vermont								
University of Vermont and State Agricultural College	28	6,690,960	23	6,264,167	4	260,142	1	166,651
Total, Vermont	**28**	**6,690,960**	**23**	**6,264,167**	**4**	**260,142**	**1**	**166,651**
Virginia								
Abtech Corporation	1	99,999	1	99,999	0	0	0	0
American Research Corporation of Virginia	1	386,833	1	386,833	0	0	0	0
Anstec, Inc.	1	989,100	0	0	0	0	1	989,100
C.P. Li Biomedical Research Corporation	2	577,200	2	577,200	0	0	0	0
Cardioresearch, Inc.	1	99,692	1	99,692	0	0	0	0
Commonwealth Biotechnologies, Inc.	1	261,961	1	262,961	0	0	0	0
Discovery Therapeutics, Inc.	2	200,000	2	200,000	0	0	0	0

Institution	Totals		Research Grants		Research Training and Development		Contracts	
	No.	Dol.	No.	Dol.	No.	Dol.	No.	Dol.
Virginia (continued)								
Eastern Virginia Medical School of the Medical College of Hampton Road	3	431,841	3	431,841	0	0	0	0
Hampton University	0	10,800	0	0	0	10,800	0	0
University of Virginia, Charlottesville	37	7,836,235	28	7,170,990	9	665,245	0	0
Virginia Commonwealth University	16	2,061,112	11	1,862,548	5	198,564	0	0
Total, Virginia	**65**	**12,954,773**	**50**	**11,091,064**	**14**	**874,609**	**1**	**989,100**
Washington								
A.S.T.H.M.A., Inc.	1	724,217	0	0	0	0	1	724,217
Barlow Scientific	1	240,114	1	240,114	0	0	0	0
Center for Health Studies	1	383,026	1	383,026	0	0	0	0
Fred Hutchinson Cancer Research Center	12	4,508,503	9	4,416,879	2	65,200	1	26,424
Icogen	2	191,163	2	191,163	0	0	0	0
Neorx Corporation	1	99,046	1	99,046	0	0	0	0
Pacific Technologies	1	346,152	1	346,152	0	0	0	0
Seattle-King County Public Health Department	2	1,112,913	2	1,112,913	0	0	0	0
Spencer Technologies	2	413,154	2	413,154	0	0	0	0
Statistics and Epidemiology Research Corporation	1	2,510,281	0	0	0	0	1	2,510,281
University of Washington	98	37,788,910	81	30,351,102	12	1,441,014	5	5,996,794
Washington State University	2	200,115	1	178,070	1	22,045	0	0
Total, Washington	**124**	**48,517,594**	**101**	**37,731,619**	**15**	**1,528,259**	**8**	**9,257,716**
West Virginia								
Marshall University	1	93,631	1	93,631	0	0	0	0
West Virginia University	3	426,235	3	426,235	0	0	0	0
Total, West Virginia	**4**	**519,866**	**4**	**519,866**	**0**	**0**	**0**	**0**
Wisconsin								
Blood Center of Southeastern Wisconsin	11	3,691,029	10	3,550,833	1	140,196	0	0
Flextech Systems, Inc.	1	99,698	1	99,698	0	0	0	0
Marquette University	1	165,980	1	165,980	0	0	0	0
Marshfield Clinic	1	1,823,930	0	0	0	0	1	1,823,930
Medical College of Wisconsin	36	10,564,087	33	10,357,241	3	206,846	0	0
University of Wisconsin, Madison	51	11,715,903	45	11,419,850	5	284,941	1	11,112
Total, Wisconsin	**101**	**28,060,627**	**90**	**25,593,602**	**9**	**631,983**	**2**	**1,835,042**
Puerto Rico								
Central University of the Caribe	0	84,362	0	84,362	0	0	0	0
Ponce School of Medicine	0	116,875	0	116,875	0	0	0	0
University of Puerto Rico Medical Sciences	0	154,389	0	154,389	0	0	0	0

Institution	Totals		Research Grants		Research Training and Development		Contracts	
	No.	Dol.	No.	Dol.	No.	Dol.	No.	Dol.
Puerto Rico (continued)								
University of Puerto Rico, Rio Piedras	0	139,317	0	139,317	0	0	0	0
Total, Puerto Rico	**0**	**494,943**	**0**	**494,943**	**0**	**0**	**0**	**0**
Total, United States	**4,032**	**$1,196,591,696**	**3,378**	**$1,019,683,348**	**491**	**$47,482,560**	**163**	**$129,425,788**
Canada								
Hospital for Sick Children, Toronto	2	691,978	1	173,770	0	0	1	518,208
Laval University	1	746,757	1	746,757	0	0	0	0
Montreal Heart Institute	1	127,358	1	127,358	0	0	0	0
University of Manitoba	1	122,613	1	122,613	0	0	0	0
University of Toronto	1	118,522	1	118,522	0	0	0	0
Total, Canada	**6**	**1,807,228**	**5**	**1,289,020**	**0**	**0**	**1**	**518,208**
United Kingdom								
University of Birmingham	1	21,760	0	0	1	21,760	0	0
Total, United Kingdom	**1**	**21,760**	**0**	**0**	**1**	**21,760**	**0**	**0**
Total, Other	**7**	**$1,828,988**	**5**	**$1,289,020**	**1**	**$21,760**	**1**	**$518,208**
Grand Total	**4,039**	**$1,198,420,684**	**3,383**	**$1,020,972,368**	**492**	**$47,504,320**	**164**	**$129,943,996**

Appendices

Types of Research Activity

List of Abbreviations

Index

Types of Research Activity

Research Projects

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

Research Projects (Cooperative Agreements) (U01): To support discrete, circumscribed projects in areas of an investigator's specific interest and competency involving substantial programmatic participation by the NHLBI during performance of the activity.

Research Program Projects (P01): To support broadly based, multidisciplinary, often long-term research projects that have specific major objectives or basic themes 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.

Small Research Grants (R03): To provide limited support for extended analyses of research data generated by clinical trials, population research, and demonstration and education studies.

Academic Research Enhancement Awards (AREA) (R15): To support small-scale research projects conducted by faculty in primarily baccalaureate degree-granting domestic institutions. Awards are for up to $75,000 for direct costs (plus applicable indirect costs) for periods not to exceed 36 months.

First Independent Research Support and Transition (FIRST) Award (R29): To provide a sufficient initial period of research support for newly independent biomedical investigators to develop their research capabilities and demonstrate the merit of their research ideas.

Method to Extend Research in Time (MERIT) Award (R37): To provide long-term research grant support to investigators whose research competency and productivity are distinctly superior and thus are likely to continue to perform in an outstanding manner. Investigators may not apply for a MERIT award; instead, they are selected by the NHLBI based on their current grant applications and their present and past grant support.

Small Business Technology Transfer (STTR) Grants—Phase I (R41): To support cooperative R&D projects between small business concerns and research institutions, limited in time and amount, to establish the technical merit and feasibility of ideas that have potential for commercialization. Awards are made to small business concerns only.

Small Business Technology Transfer (STTR) Grants—Phase II (R42): To support in-depth development of cooperative R&D projects between small business concerns and research institutions, limited in time and amount, whose feasibility has been established in Phase I and that have potential for commercialization. Awards are made to small business concerns only.

Small Business Innovation Research (SBIR) Grants, 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.

Small Business Innovation Research (SBIR) Grants, Phase II (R44): Research project support for ideas that have been shown to be feasible in Phase I and that are likely to result in commercially marketable products or services.

James A. Shannon Director's Award (R55): To provide a limited award to investigators to further develop, test, and refine research techniques; perform secondary analysis of available data sets; test the feasibility of innovative and creative approaches; and conduct other discrete projects that can demonstrate their research capabilities and lend additional weight to their already meritorious applications.

Research Centers

Specialized Centers of Research (SCOR) Grants (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. The SCOR 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 Grants (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.

Research Career Programs

Research Scientist Development Award (K01): To support scientists in need of both advanced research training and additional research experience in areas related to cardiovascular, lung, or blood health and disease; transfusion medicine; or sleep disorders.

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 careers. New grants are no longer awarded.

Academic Awards (K07): To foster academic career development of teacher-investigators, to develop and implement multidisciplinary curricula, and to strengthen existing programs. This award series includes the Preventive Cardiology Academic Award (PCAA), the Preventive Pulmonary Academic Award (PPAA), the Transfusion Medicine Academic Award (TMAA), the Pulmonary Academic Award (PAA), and the Academic Awards in Systemic Pulmonary and Vascular Diseases. New grants are no longer awarded in the Pulmonary Academic Program.

Clinical Investigator Development Award (CIDA) (K08): To provide an opportunity for clinically trained physicians to develop research skills and gain experience in advanced research methods and experimental approaches in basic and applied sciences relevant to cardiovascular, pulmonary, and hematological diseases to develop into independent investigators and to aid in filling faculty gaps in areas of shortage in health profession institutions.

Physician Scientist Award (PSA) (K11): To encourage newly trained clinicians to develop independent research skills and experience in one of the fundamental sciences.

Minority School Faculty Development Award (K14): To develop faculty investigators at minority schools and to enhance their research capabilities in areas related to heart, lung, and blood diseases and blood resources.

Research Development Award for Minority Faculty (K14): To encourage the development of minority faculty investigators and to enhance their research capabilities in areas related to cardiovascular, lung, or blood health and disease; transfusion medicine; or sleep disorders.

Other Research Grants

Scientific Evaluation (R09): To provide funds to the chairman of an initial review group for operation of the review group.

Cooperative Clinical Research (R10) (U10): 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.

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.

Education Projects (R25): To develop and/or carry out a program as it relates to a categorical area in one or more of the areas of education, information, training, technical assistance, coordination, or evaluation.

Minority Biomedical Research Support (MBRS) Grants (S06) (S14): 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.

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 dealing with new scientific developments.

Scientific Evaluation (U09): To support an initial Scientific Review Group responsible for the assessment of scientific and technical merit of grant applications.

Conference (Cooperative Agreements) (U13): To support international, national, or regional meetings, conferences, and workshops where substantial programmatic involvement is planned to assist the recipient.

Historical Black College and University Scientist Award (UH1): To strengthen and augment the human resources at Historically Black Colleges and Universities (HBCUs) by recruiting an established research scientist into their biomedical and/or behavioral sciences department; to enhance the career of the recruited research scientist; and to strengthen other HBCU resources for the conduct of biomedical and/or behavioral research in areas related to cardiovascular, lung, or blood health and disease; transfusion medicine; or sleep disorders.

Individual National Research Service Awards (NRSA)

Predoctoral Individual NRSA (F31): To provide predoctoral research fellowship training to individuals to broaden their scientific background and extend their potential for research in areas related to heart, lung, and blood diseases and blood resources.

Postdoctoral Individual NRSA (F32): To provide postdoctoral research fellowship training to individuals to broaden their scientific background and extend their potential for research in areas related to heart, lung, and blood diseases and blood resources.

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 their 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 areas related to heart, lung, and blood diseases and blood resources.

Intramural NRSA Individual Postdoctoral Program Appointee (F35): To offer research health scientists, research clinicians, and others the opportunity to receive full-time research training in the intramural laboratories of the NHLBI and of other Institutes of the NIH.

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 areas related to heart, lung, and blood diseases and blood resources.

Minority Institutional Research Training Program (T32M): To support full-time research training for investigative careers at minority schools in areas of cardiovascular, pulmonary, or hematologic diseases. Graduate students, postdoctoral students, or health professions students may be supported under this program.

Short-Term Research Training (T35 and T35S): 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 Training for Minority Students Program and short-term training for students in health professional schools.

MARC Visiting Professors for Minority Institutions (T36): To increase the number of well-trained minority scientists in biomedical disciplines and to strengthen the research and teaching capabilities of minority institutions.

Other Support

Research and Development Contracts (N01): To develop or apply new knowledge or test, screen, or evaluate a product, material, device, or component for use by the scientific community.

NIH Interagency Agreements (Y01): To provide a source of funds to another Federal agency to acquire specific products, services, or studies.

NIH Intra-agency Agreements (Y02): To provide a source of funds to another NIH component to acquire specific products, services, or studies.

Minority Research Supplements Programs: To provide supplemental funds to active NHLBI grants to support the research of minority high school, undergraduate, and graduate students; postdoctoral trainees; and investigators.

List of Abbreviations

ACCESS	A Case Controlled Etiologic Study of Sarcoidosis
ACRN	Asthma Clinical Research Network
AFFIRM	Atrial Fibrillation Follow-up: Investigations in Rhythm Management
AIDS	acquired immunodeficiency syndrome
ALLHAT	Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial
AMI	acute myocardial infarction
ARDS	adult respiratory distress syndrome
ARIC	Atherosclerosis Risk in Communities
ATP	Adult Treatment Panel
AVID	Antiarrhythmic Versus Implantable Defibrillator
BARI	Bypass Angioplasty Revascularization Investigation
BEST	Beta-Blocker Evaluation Survival Trial
BHAT	Beta-Blocker Heart Attack Trial
CAMP	Childhood Asthma Management Program
CARDIA	Coronary Artery Risk Development in Young Adults
CASS	Coronary Artery Surgical Study
CATCH	Child and Adolescent Trial for Cardiovascular Health
CCSCD	Clinical Course of Sickle Cell Disease
CF	cystic fibrosis
CHD	coronary heart disease
CHPP	Cardiovascular Health Promotion Project
CHS	Cardiovascular Health Study
CIDA	Clinical Investigator Development Award
COPD	chronic obstructive pulmonary disease
CPB	Cardiopulmonary Bypass
CPPT	Coronary Primary Prevention Trial
CSCC	Comprehensive Sickle Cell Centers
CVD	cardiovascular diseases
DASH	Dietary Approaches to Stop Hypertension
DBDR	Division of Blood Diseases and Resources
DECA	Division of Epidemiology and Clinical Applications
DELTA	Dietary Effects on Lipoproteins and Thrombogenic Activity
DHVD	Division of Heart and Vascular Diseases
DIR	Division of Intramural Research
DISC	Dietary Intervention Study in Children
DLD	Division of Lung Diseases
DOT	Department of Transportation
EAST	Emory Angioplasty Surgery Trial
ENRICHD	Enhancing Recovery in Coronary Heart Disease
ERA	Estrogen Replacement and Atherosclerosis Trial
FDA	Food and Drug Administration
FIRST	First Independent Research Support and Transition
FY	fiscal year
GvHD	graft versus host disease

HBCU	Historically Black Colleges and Universities
HCFA	Health Care Financing Administration
HCV	Hepatitis C
HEW	Department of Health, Education, and Welfare (now HHS)
HHP	Honolulu Heart Program
HHS	Health and Human Services (formerly HEW)
HIV	human immunodeficiency virus
HIVIG	HIV immunoglobulin
ICD	International Classification of Diseases; also, implantable cardiac defibrillator
IND	investigational new drug
IVAS	Innovative Ventricular Assist System
JNC V	The Fifth Report of the Joint National Committee on the Detection, Evaluation, and Treatment of High Blood Pressure
LAM	Lymphangioleiomyomatosis
LRC	Lipid Research Clinics
MARC	Minority Access to Research Careers
MBRS	Minority Biomedical Research Support
MERIT	Method to Extend Research in Time
MI	myocardial infarction
MOST	Mode Selection Trial in Sinus Node Dysfunction
MSH	Multicenter Study of Hydroxyurea in Sickle Cell Anemia
MRFIT	Multiple Risk Factor Intervention Trial
MUSTT	Multicenter Unsustained Tachycardia Trial
NAEPP	National Asthma Education and Prevention Program
NASA	National Aeronautics and Space Administration
NCEP	National Cholesterol Education Program
NCHS	National Center for Health Statistics
NCSDR	National Center on Sleep Disorders Research
NHAAP	National Heart Attack Alert Program
NHANES	National Health and Nutrition Examination Survey
NHBPEP	National High Blood Pressure Education Program
NHI	National Heart Institute
NHIS	National Health Interview Survey
NHLBAC	National Heart, Lung, and Blood Advisory Council
NHLBI	National Heart, Lung, and Blood Institute (formerly NHI and NHLI)
NHLI	National Heart and Lung Institute
NICHD	National Institute of Child Health and Human Development
NIDDK	National Institute of Diabetes and Digestive and Kidney Diseases
NIH	National Institutes of Health
NRSA	National Research Service Award
NSF	National Sleep Foundation
OAR	Office of AIDS Research
OD	Office of the Director
OEI	Obesity Education Initiative
OPEC	Office of Prevention, Education, and Control
ORMH	Office of Research on Minority Health
PA	Program Announcement
PATHS	Prevention and Treatment of Hypertension Study
PATHWAYS	Obesity Prevention in American Indians

PCAA	Preventive Cardiology Academic Award
PDAY	Pathobiological Determinants of Atherosclerosis in Youth
PEACE	Prevention of Events with Angiotensin Converting Enzyme Inhibitor Therapy
PED HUG	Pediatric Hydroxyurea in Sickle Cell Anemia
PEPI	Postmenopausal Estrogen/ Progestin Interventions
PHS	Public Health Service
PIH	pyridoxal isonicotinoyl hydrazone
POSCH	Program on Surgical Control of Hyperlipidemias
PPAA	Preventive Pulmonary Academic Award
PROPS II	Penicillin Prophylaxis in Sickle Cell Disease
PSA	Physician Scientist Award
PVAA	Pulmonary Vascular Academic Award
RCA	Research Career Award
RCDA	Research Career Development Award
R&D	research and development
RDS	respiratory distress syndrome
REACT	Rapid Early Action for Coronary Treatment
REDS	Retrovirus Epidemiology Donor Study
RFA	Request for Applications
RFEHA	Risk Factors in Early Human Atherogenesis
RFP	Request for Proposals
RMS	research management and support
RPGs	research project grants
SBIR	Small Business Innovation Research
SCOR	Specialized Center(s) of Research
SEP	Special Emphasis Panel
SES	Socioeconomic Status
SIDS	sudden infant death syndrome
SK	streptokinase
STOP	Stroke Prevention in Sickle Cell Anemia
STTR	Small Business Technology Transfer
TB	tuberculosis
TMAA	Transfusion Medicine Academic Award
TOHP	Trials of Hypertension Prevention
VATS	Viral Activation Transfusion Study
WACS	Women's Antioxidant and Cardiovascular Study
WELL-HART	Women's Estrogen/Progestin Lipid Lowering Hormonal Atherosclerosis Regression Trial
WISE	Women's Ischemia Syndrome Evaluation
WHO	World Health Organization

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