

FINANCIAL REPORT OF NIH BIOMEDICAL RESEARCH AND TRAINING IN NUTRITION, FY 1996-1998

THE LEADER IN FEDERALLY SUPPORTED NUTRITION RESEARCH AND TRAINING

In Fiscal Years 1996 through 1998, the NIH continued to lead all Federal agencies in financial support of nutrition research and training, with totals of \$439 million, \$453 million and \$494 million, respectively. These totals represent the combined individual contributions of the 18 NIH institutes and two centers that supported

biomedical nutrition research and training in those fiscal years. Actual obligations for FY 1996-1998 biomedical nutrition research and training for all NIH institutes and centers (ICs) are shown in Table 1 as amounts and as percentages of their total obligation.

Leading ICs in dollars expended in support of nutrition research for all three fiscal years were NCI, NHLBI and NIDDK. Leading in terms of the percentage of total budget of each IC

**Table 1. Actual Obligations, NIH Biomedical Nutrition Research and Training,
as a Percentage of Total ICD Obligations, by NIH Component, FY 1996-1998
(in thousands of dollars)**

ICD	FY 1996			FY 1997			FY 1998		
	Nutrition Research and Training*	Total ICD Obligations**	Nutrition as % of Total Obligations	Nutrition Research and Training*	Total ICD Obligations**	Nutrition as % of Total Obligations	Nutrition Research and Training*	Total ICD Obligations**	Nutrition as % of Total Obligations
NCI	116,567	2,254,940	5.2	121,739	2,389,041	5.1	119,829	2,551,281	5.1
NHLBI	75,306	1,351,422	5.6	88,943	1,431,821	6.2	118,886	1,526,276	6.2
NIDCR	6,087	183,478	3.3	8,225	197,063	4.2	6,755	210,172	4.2
NIDDK	93,322	768,353	12.1	98,673	813,064	12.1	105,026	869,686	12.1
NINDS	1,190	683,504	0.2	999	729,249	0.1	4,032	778,432	0.1
NIAID	7,873	1,171,160	0.7	10,973	1,257,793	0.9	12,355	1,352,119	0.9
NIGMS	2,628	944,312	0.3	2,265	995,389	0.2	2,120	1,061,505	0.2
NICHD	28,823	592,971	4.9	29,585	631,262	4.7	28,401	672,073	4.7
NEI	14,218	313,008	4.5	14,913	331,587	4.5	15,665	354,153	4.5
NIEHS	4,068	287,614	1.4	5,806	307,555	1.9	7,078	328,711	1.9
NIA	20,203	453,492	4.5	19,226	484,318	4.0	20,763	517,082	4.0
NIAMS	2,717	243,014	1.1	4,846	256,192	1.9	4,569	273,879	1.9
NIDCD	2,366	175,864	1.3	2,716	188,217	1.4	2,514	199,786	1.4
NIMH	7,481	659,941	1.1	7,158	700,757	1.0	7,363	748,329	1.0
NIDA	2,878	458,231	0.6	2,226	499,313	0.4	1,980	536,852	0.4
NIAAA	3,992	198,480	2.0	7,046	211,193	3.3	7,632	226,224	3.3
NCRR	21,626	390,163	5.5	25,446	414,049	6.1	26,345	452,193	6.1
NINR	1,851	55,671	3.3	2,401	59,551	4.0	2,775	63,340	4.0
FIC	97	25,243	0.4	120	26,500	0.5	354	28,190	0.5
OD+	25,520	260,432	0.4	-	-	-	-	-	-
TOTAL**	\$438,813	11,471,293	3.8	453,306	11,923,914	3.8	494,443	120,777,283	3.9

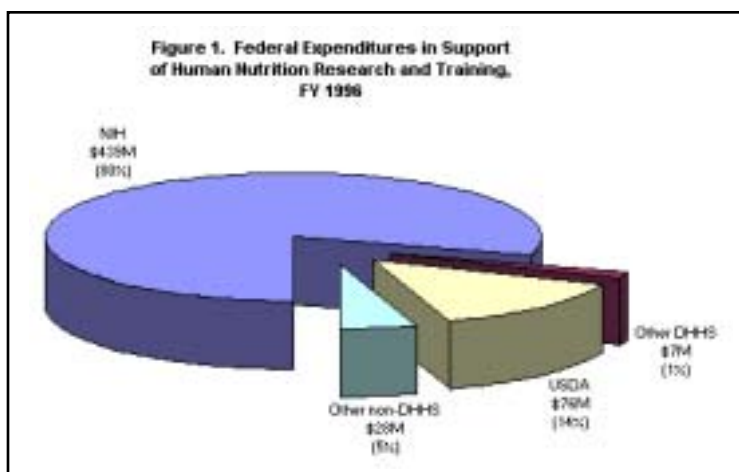
* Actual obligations. Source: Human Nutrition Research and Information Management (HNRIM) System database.

** Obligations. Source: NIH Office of Program Planning and Evaluation.

+ Women's Health Initiative

** Total excludes obligations for NHGRI, National Library of Medicine, Office of the Director (FY 1997-98), and buildings and facilities.

Figure 1. Federal Expenditures in Support of Human Nutrition Research and Training, FY 1996



Source: Human Nutrition Research and Information Management (HNRIM) System database

dedicated to support of nutrition research and training in FY 1996 were NIDDK, with 12.1 percent; NHLBI, with 5.6 percent and NCCR, with 5.5 percent. Corresponding figures for FY 1997 were NIDDK, with 12.1 percent; NHLBI, with 6.2 percent; and NCCR, with 6.1 percent. For FY 1998, the percentages and rankings of these three ICs were unchanged.

TRENDS IN NUTRITION RESEARCH AND TRAINING, 1989-1998

NIH nutrition research and training dollars have increased steadily during the past decade, growing from \$287 million in FY 1989 to \$494 million in FY 1998. NIH actual obligations for nutrition research and training by NIH component during the past 10 years are shown in Table 2. With few exceptions, the trend in dollars has been steadily upward for most ICs.

As shown in Table 3, total NIH expenditures for nutrition research and training have increased consistently since FY 1989 and have constituted approximately 4 percent of total NIH obligations during that time. This table also shows total NIH biomedical nutrition research and training support in constant, as well as current dollars. For example, nutrition research and training support showed a \$207 million, or 42 percent, increase between FY 1989 and FY 1998 in current (unadjusted) dollars. In constant dollars (i.e., adjusted for inflationary price increases), however, nutrition and research training support

in FY 1998 represented a 19 percent increase over the FY 1989 level.

In FY 1996, the latest year for which complete data for all agencies are available, the NIH led all Federal agencies in financial support of nutrition research and training with a total of \$439 million, as shown in Figure 1. This total represented 80 percent of all Federal expenditures and 98 percent of all DHHS nutrition research and training expenditures in FY 1996. NIH nutrition expenditures have consistently represented between 70 and 80 percent of total Federal nutrition expenditures over the past decade.

EXPENDITURES BY HNRIM SYSTEM CATEGORY AND INTEREST AREA

The NIH nutrition research support in the HNRIM system classification categories and the number of grants or contracts funded in each category are shown in Table 4. The column labeled "actual obligations" represents the *nutrition* funding for projects in each classification category, not the funding for the classification category per se. For example, a study of the effects of smoking and diet on coronary heart disease and obesity that was considered to be 60 percent nutrition-related and had a total budget of \$100,000 would contribute \$60,000 toward the actual obligations reported for the area "Cardiovascular Disease and Nutrition" as well as \$60,000 toward the actual obligations reported for the area "Obesity, Anorexia, and Appetite Control." As this example illustrates, a grant or contract may appear in more than one category. Thus, if all actual obligations in the 41 categories were summed, the sum would exceed the total nutrition expenditures for that fiscal year. The column labeled "percent of total" represents the nutrition funds expended in a given category in relation to total NIH obligations for nutrition research and training, which totaled \$439 million for FY 1996, \$453 million for FY 1997 and \$494 million for FY 1998.

Although NIH nutrition research encompasses all of the classification categories, the largest component is concentrated in the area of Research in the Biomedical and Behavioral Sciences (codes 1 through 25 and code 35). Codes 51 through 56 represent NIH Special Interest Areas. The most frequently assigned nutrition classification codes include "Cancer and Nutrition," "Other Diseases and Nutrition," "Lipids (Fats and Oils)," "Cardiovascular Disease and Nutrition," and "Prevention of Disease."

The NIH supports two broad categories of research: extramural and intramural. The extramural programs are responsible for approximately 80-85 percent of the total NIH resources in the form of research grants or contracts. Through these programs, NIH makes awards of various kinds to institutions throughout the United States and the world. Extramural awards are based on a two-tiered peer-review assessment - one for scientific merit and one for program relevance.

Support by Extramural and Intramural Categories

**Table 2. Actual Obligations for Nutrition Research and Training by
NIH Component, Fiscal Years 1989-1998
(Thousands of Dollars)**

NIH component	1989	1990 ^a	1991	1992	1993 ^b	1994 ^c	1995	1996	1997 ^d	1998
Total	\$286,975	\$292,359	\$310,810	\$343,788	\$373,251	\$400,701	428,687	438,813	453,306	494,443
NIA	8,494	10,070	15,693	19,163	18,595	19,942	20,516	20,203	19,226	20,763
NIAAA	-	-	-	-	4,303	3,431	3,901	3,992	7,046	7,632
NIAID	3,797	4,104	4,421	5,153	6,322	6,763	7,963	7,873	10,973	12,355
NIAMS	4,128	4,362	4,844	5,152	5,426	5,520	3,998	2,717	4,846	4,569
NCI	64,524	66,987	74,777	83,651	94,326	104,939	112,781	116,567	121,739	119,829
NICHD	31,247	28,857	31,702	32,882	33,118	31,165	32,818	28,823	29,585	28,401
NIDCD	1,174	1,974	2,113	2,405	2,375	2,162	2,150	2,366	2,716	2,514
NIDCR*	1,571	1,787	2,358	3,392	3,550	4,164	6,408	6,087	8,225	6,755
NIDDK	63,955	67,526	70,195	74,844	72,714	70,049	75,980	93,322	98,673	105,026
NIDA	-	-	-	-	3,028	2,548	2,621	2,878	2,226	1,980
NIEHS	10,261	8,641	4,138	4,035	4,671	4,654	4,826	4,068	5,806	7,078
NEI	6,128	8,957	11,650	15,008	15,538	16,057	16,634	14,218	14,913	15,665
NIGMS	1,953	2,285	2,507	2,677	2,465	2,169	2,503	2,628	2,265	2,120
NHLBI	64,287	61,834	58,017	65,070	67,879	70,545	73,466	75,306	88,943	118,886
NIMH	-	-	-	-	10,592	7,760	8,446	7,481	7,158	7,363
NINDS	1,095	1,143	1,866	1,873	1,826	1,777	1,738	1,190	999	4,032
NINR*	459	665	1,129	3,437	2,988	2,787	3,106	1,851	2,401	2,775
NCRR	23,811	23,052	25,317	24,989	23,524	21,995	22,130	21,626	25,446	26,345
FIC	92	118	82	56	10	89	166	97	120	354
OD	-	-	-	-	-	22,183	26,535	25,520	-	-

^a In FY 1990 DRR was reorganized and renamed NCRR.

^b In FY 1993 the three research institutes of ADAMHA were transferred to NIH, and NCNR was made an institute and renamed NINR.

^c In FY 1994 includes funding for the Women's Health Initiative.

^d In FY 1997 Women's Health Initiative transferred to NHLBI.

Within the NIH itself, and accounting for approximately 11 percent of its budget, is the intramural program. All of the NIH institutes except NIGMS have an intramural component of laboratory and clinical research programs. More than 2,000 intramural research projects are in progress at all times, making the NIH the largest center for biomedical and behavioral research in the world. Boards of scientific counselors are responsible for assessing the quality and direction of the intramural program, and the OD provides scientific and policy oversight.

efforts of scientists outside the NIH (i.e., extramurally): grants and cooperative agreements (financial assistance awards) and contracts (acquisition awards). Appendix I gives details on NIH award mechanisms. Financial support by NIH of extramural nutrition research and training is provided through all three of these major funding mechanisms. Support of extramural nutrition research utilizes research project grants, program project grants, center grants, contracts, and cooperative agreements.

The NIH relies on three major funding mechanisms as the administrative instruments for accomplishing its program goals through the

Table 3. Actual Obligations, NIH Biomedical Nutrition Research and Training, in Current and Constant Dollars, and as a Percentage of Total NIH Obligations FY 1985-1995 (in thousands of dollars)

Fiscal Year	Nutrition Research and Training, Current Dollars	Nutrition Research and Training, Constant Dollars*	Total NIH Obligations	Current Nutrition Dollars as a Percentage of Total NIH Obligations
1985	207,316	207,316	5,121,557	4.0
1986	212,978	204,393	5,296,977	4.0
1987	260,611	246,557	6,175,038	4.2
1988	276,195	239,753	6,610,430	4.2
1989	286,975	236,778	7,157,978	4.0
1990	292,359	228,584	7,581,484	3.9
1991	310,810	231,775	8,154,101	3.8
1992	343,788	245,563	8,879,398	3.9
1993	373,251	257,770	9,919,955	3.8
1994	400,701	266,424	10,579,468	3.8
1995	428,687	276,038	10,901,647	3.9

*Based on biomedical R&D price index, FY 1985 = 100 percent.

All of these may include clinical trials; research resources support; reimbursement agreements; research career development awards; and new, academic, and teacher investigator awards. Extramural training in biomedical and behavioral nutrition research is supported through National Research Service Awards, with training grants awarded to institutions and fellowships awarded to individuals. The intramural nutrition program consists of research projects and training. The actual obligations in biomedical nutrition research and training for fiscal years 1996 - 1998 are shown by category of support in Table 5.

Extramural projects comprised about 95 percent of nutrition related expenditures in each of the fiscal years 1996 (\$417 million), 1997 (\$432 million) and 1998 (\$472 million). Research grants continue to comprise the largest category of support throughout this period, with \$271 million and 1,837 projects in FY 1996, \$283 million and 1,927 projects in FY 1997, and \$300 million and 2067 projects in FY 1998. Contracts made up the second largest category in FY 1996 with \$43 million and 152 projects, and the third largest category in both FY 1997 and 1998, with \$41 million and 143 projects each of these years. Conversely, Program Projects ranked third in FY 1996 with \$40 million and 91 projects, but ranked second in FY 1997 with \$43 million and 91 projects, and second in FY 1998 with \$57 million and 102 projects. Centers comprised the fourth largest category of support in all three years, with \$33 million (139 projects) in FY 1996,

\$30 million (137 projects) in FY 1997, and \$36 million (148 projects) in FY 1998. The intramural program represented about 5 percent of expenditures for nutrition research and training during FY 1996 - 1998, with funding of \$22 million (161 projects), \$21 million (142 projects), and \$23 million (143 projects) respectively.

Nutrition Research Training

The NIH supports training in biomedical and behavioral nutrition research in both the extramural and the intramural programs. Within the extramural program, two basic mechanisms are used for nutrition training support: institutional awards and individual awards (see Appendix D). The institutional awards, commonly called "training grants," are designed to enable institutions to make training awards to individuals selected by them for predoctoral and postdoctoral research training. In FY 1996, NIH spent \$4.4 million on 58 training grants in nutrition. Corresponding expenditures for training in FY 1997 were \$4.5 million (61 grants), and \$5 million (64 grants) in FY 1998. The predoctoral and postdoctoral individual National Research Service Awards, called "fellowships," are awarded to provide pre- and postdoctoral research training to individuals to broaden their scientific background and extend their potential for research. Expenditures for fellowships in nutrition were \$0.7 million for 47 fellowships in FY 1996, \$1 million (51 fellowships) in FY 1997, and \$1.1 million (68 fellowships) in FY 1998.

**Table 4. Actual Obligations, NIH Biomedical Nutrition Research and Training, by
HNRIM Classification Category, FY 1996-1998
(in thousands of dollars)**

Nutrition Research Classification		FY 1996			FY 1997			FY 1998		
		No. of Grants & Contracts	Actual Oblig- ations	Pct of Total	No. of Grants & Contracts	Actual Oblig- ations	Pct of Total	No. of Grants & Contracts	Actual Oblig- ations	Pct of Total
Code	Area									
1	Maternal Nutrition	139	27,239	6	122	25,384	6	112	23,545	5
2	Infant and Child Nutrition	211	44,447	10	232	50,138	11	227	48,663	11
3	Adolescent Nutrition	74	18,346	4	74	18,552	4	64	15,480	4
4	Adult Nutrition	127	47,720	11	135	49,511	11	130	50,525	12
5	Nutrition of the Elderly	192	52,634	12	163	57,056	13	181	56,177	13
6	Cardiovascular Disease and Nutrition	521	124,209	29	470	114,766	26	518	140,960	32
7	Cancer and Nutrition	684	150,274	35	797	159,428	37	878	158,163	36
8	Other Diseases and Nutrition	580	113,052	26	555	112,974	26	572	116,687	27
9	Trauma (Burns) and Nutrition	36	4,162	1	33	2,967	1	35	3,343	1
10	Infection, Immunology, and Nutrition	158	28,570	7	168	34,475	8	173	32,054	7
11	Obesity, Anorexia, and Appetite Control	403	91,250	21	425	91,781	21	437	93,686	22
12	Genetics and Nutrition	294	54,304	12	311	52,083	12	318	55,557	13
13	Nutrition and Function	200	33,739	8	191	31,551	7	163	28,123	6
14	Nutrient-Nutrient/Drug/Toxicant Interactions	232	31,982	7	233	38,386	9	232	42,211	10
15	Other Conditions and Nutrition	236	27,228	6	218	29,804	7	189	30,331	7
16	Research on Nutritional Status	170	55,045	13	142	35,918	8	140	37,468	9
17	Carbohydrates	248	45,539	10	236	43,022	10	241	41,799	10
18	Lipids (Fats and Oils)	479	103,015	24	535	131,583	30	510	132,420	30
19	Alcohols	95	9,465	2	93	13,000	3	114	17,336	4
20	Proteins and Amino Acids	226	32,379	7	220	38,709	9	223	42,951	10
21	Vitamins	359	74,548	17	447	108,912	25	456	103,082	24
22	Minerals and Trace Elements	341	51,958	12	344	55,219	13	361	64,000	15
23	Water and Electrolytes	85	13,411	3	79	13,425	3	77	12,611	3
24	Fiber	39	6,693	2	35	6,897	1	33	10,844	2
25	Other Nutrients in Food	30	11,527	3	40	12,650	3	47	11,411	3
26	Food Composition	23	2,353	1	24	2,976	1	26	2,859	1
27	Bioavailability of Nutrients	25	3,236	1	26	3,713	1	23	3,508	1
28	Effects of Technology on Foods/Diets	8	892	<1	8	3,020	1	9	1,685	<1
29	Other Research in Food Science	7	996	<1	4	596	<1	5	571	<1
30	Food Consumption Surveys, R&D	13	985	<1	14	741	<1	15	1,938	<1
31	Dietary Practices, Food Consumption & Determinants	111	17,310	4	92	16,247	4	87	13,717	3
32	Methods for Educating and Informing the Public	49	17,675	4	59	15,174	3	60	15,001	3
33	Other Research in Nutrition Education	7	1,213	<1	7	1,237	<1	5	719	<1
34	Government Policy and Socioeconomic Factors	3	682	<1	2	116	<1	2	500	<1
35	Parenteral, Enteral, & Elemental Nutrition	46	7,957	2	42	7,257	2	44	9,234	2
51	Prevention of Disease	503	128,791	30	470	131,027	30	480	124,084	29
52	International Research	32	7,862	2	35	7,157	2	38	9,196	2
53	Epidemiological Research	231	57,398	13	227	39,870	9	226	39,415	9
54	Education for Professionals	48	5,613	1	43	5,181	1	41	4,401	1
55	Education for the Public	53	15,352	4	62	12,116	3	62	10,615	2
56	Clinical Trials	159	62,746	14	160	64,988	15	164	62,485	14

* The actual obligations represent the *nutrition* funding for projects in each classification area, not the funding of the classification area per se. A grant or contract may be assigned to more than one of these areas. Thus, summing the expenditures by area will yield a value that exceeds the total expenditures and summing the percent of total will yield a value greater than 100 percent.

** The total expenditure of the NIH nutrition program was \$439 million in FY 1996, \$453 million in FY 1997, and \$494 million in FY 1998.

Table 5. Actual Obligations, NIH Biomedical Nutrition Research and Training, by Category of Support, FY 1996-1998
(in thousands of dollars)

Funding Mechanism	Item	FY 1996				FY 1997				FY 1998			
		Breakdown		Total		Breakdown		Total		Breakdown		Total	
		Number	Cost	Number	Cost	Number	Cost	Number	Cost	Number	Cost	Number	Cost
Extramural													
Research Grants	Regular	1,748	244,300			1,834	255,211			1,972	274,029		
	Clinical Trials	89	26,932			93	28,274			95	26,138		
	Total			1,837	271,232			1,927	283,485			2,067	300,167
Program Projects	Regular	88	35,639			88	39,282			98	51,850		
	Clinical Trials	3	4,042			3	4,208			4	4,820		
	Total			91	39,681			91	43,490			102	56,670
Contracts	Regular	98	15,855			90	12,396			92	14,584		
	Clinical Trials	54	27,619			53	29,026			51	26,876		
	Total			152	43,474			143	41,422			143	41,460
Centers	Regular	135	30,268			133	27,600			143	33,043		
	Clinical Trials	4	2,780			4	2,609			5	3,281		
	Total			139	33,048			137	30,209			148	36,324
Training	Training Grants	58	4,395			61	4,495			64	5,045		
	Fellowships	47	714			51	933			68	1,149		
	Total			105	5,109			112	5,428			132	6,194
Research Resources Support			74	18,939			70	22,606			72	22,975	
Career Development Awards			101	4,623			96	4,952			120	6,670	
Reimbursement Agreements			5	1,147			9	584			15	1,285	
Subtotal, Extramural				2,504	417,254			2,585	432,176			2,799	471,745
Intramural													
Projects				161	21,558			142	21,130			143	22,699
Training				0				0				0	
Subtotal, Intramural				161	21,558			142	21,130			143	22,699
Total NIH Biomedical Nutrition Research & Training				2,665	438,813			2,727	453,306			2,942	494,443