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ABSTRACT

This survey is intended as an aid in assessing the magnitude and character of the nonfederal contribution to health research, in particular the present availability of alternative nonfederal funding sources at doctoral institutions (the prime locus of the nation's biomedical research effort), and to elicit from institutional representatives their judgments about the prospects for increased participation by state/local governments and the private sector in support of health related research. Usable data was returned by 73 percent of the institutions surveyed offering biomedical research and development activity. The data supplied was analysed in relation to selected institutional characteristics: (1) control of institution (public/private), (2) relative size of biomedical research enterprise (Top 20/Bottom 20), and (3) whether respondent institutions possessed a medical school or not. Respondents also rated their institutions' effectiveness in finding new nonfederal funds for biomedical research and their projected nonfederal funds for the next five years. Finally, the respondents commented on anticipated changes in nonfederal funding, including the nature, magnitude, and implications of these changes. (Author/JMF)

Nonfederal Funding of Biomedical Research and Development:

A Survey of Doctoral Institutions

Frank J. Atelsek and Irene L. Gomberg

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Roger W. Heyns, *President*

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The Higher Education Panel is a survey research program established by the Council for the purpose of securing policy-related information quickly from representative samples of colleges and universities. *Higher Education Panel Reports* are designed to expedite communication of the Panel's survey findings to policy-makers in government, in the associations, and in educational institutions across the nation.

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Paula R. Knepper directed the data processing phase of the survey, and Gloria Robbins was responsible for preparation of the manuscript and tables for publication.

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Nonfederal Funding of Biomedical Research and Development: A Survey of Doctoral Institutions

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Foundations, voluntary health agencies, state and local governments, and industry have played a vital role in the sponsorship of health research in this country, counterbalancing and supplementing the forms and directions of support arising from federal efforts. As an aid in assessing the magnitude and character of this nonfederal contribution, the National Institutes of Health requested that the American Council on Education undertake the present survey as part of its Higher Education Panel research program. In particular, the survey sought to gauge the present availability of alternative nonfederal funding sources at doctoral institutions (the prime locus of the nation's biomedical research effort), and to elicit from institutional representatives their judgments about the prospects for increased participation by state/local governments and the private sector in support of health-related research. A copy of the questionnaire is presented in Appendix A.

Methods Summary

The Higher Education Panel is a survey-research program established at the American Council on Education in 1971 for the purpose of conducting small-scale surveys on topics of general policy interest to the academic community and agencies of government. The Panel is based on a network of campus representatives at 644 colleges and universities broadly representative of all colleges and universities in the United States.

Inasmuch as the preponderance of biomedical research and development occurs at graduate institutions[1], this survey sample was limited to the 220 Panel members which grant the doctorate degree. In the course of the survey, 22 had indicated that there was no biomedical research and development activity on their campuses. By the closing date for survey returns, useable data had been received from 145 of the remaining 198 institutions, for a response rate of 73 percent.[2]

Data reported in the tabulations represent aggregated totals (unweighted). Because respondents differ in some respects from nonrespondents (see Appendix B), and because institutions provided their best estimates rather than precise figures, generalizations beyond the respondent sample are subject to some reservation and qualification.

Nevertheless, the survey findings presented here provide the best available data on nonfederal sponsorship of biomedical research and development at academic institutions and should be of interest to policymakers and others involved in the assessment of the nation's biomedical research effort.

Findings

In FY 1974 federal agencies financed more than three-quarters of biomedical R&D[3] expenditures at the 145 doctoral institutions surveyed; nonfederal sources supported roughly one-fourth of the total (Table 1). Public institutions relied

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[1] In FY 1974, doctorate-granting institutions accounted for 98.4 percent of all expenditures for research in the life sciences at colleges and universities. Additionally, doctorate-granting institutions accounted for 97.4 percent of all expenditures for research and development in all fields of science. National Science Foundation, Resources for Scientific Activities at Universities and Colleges, 1974 (Washington, D.C.: forthcoming).

[2] A number of the tabulations contained in this report are limited to the 121 respondent institutions able to provide expenditure data for an earlier year (FY 1970) as well as the more current year (FY 1974). (See Tables.)

[3] For a definition of the term "biomedical R&D" and an illustrative list of disciplines covered by this definition, see the copy of the survey instrument contained in Appendix A.

somewhat more heavily on nonfederal contributions (24 percent) than did private institutions (20 percent).

Total dollar support for biomedical R&D at academic institutions increased moderately between 1970-1974; however, real funding levels -- as measured in constant dollars -- declined (Table 2). During this period the nonfederal share remained relatively stable, declining a scant .5 percent. Thus, the gross relationship between federal and nonfederal sources for the institutions as a whole has changed little between 1970-1974; moreover, the composition of nonfederal support among these institutions has remained fundamentally unaltered.

Nonfederal sources which contributed most substantially to support of biomedical R&D within the academic setting in FY 1974 included: foundations and voluntary health agencies (accounting for 6 percent of the total biomedical research volume at the institutions surveyed), state and local governments (5 percent), and the academic institutions themselves (7 percent); other contributions derived from industry and business (2 percent), and private gifts and grants (2 percent).

Nonfederal Funding by Selected Institutional Characteristics

Institutions were classified according to three characteristics that form the basis for most of the tabulations and analyses presented in this report: (1) control of institution (public/private), (2) relative size of biomedical research enterprise (Top 20/Bottom 20), and (3) whether respondent institutions possessed a medical school or not. The pattern of response among these categories is briefly highlighted below:

Public and Private Institutions. For public institutions, no significant changes in the composition of support were evident between 1970-1974 (Table 3). The largest single nonfederal contribution for support of biomedical R&D at these schools derived from the institutions' own funds (ultimately public in origin).

Among private institutions, however, a moderate shift occurred in the distribution of nonfederal funds devoted to biomedical R&D: the percentage of foundation and voluntary health agency support dropped 7 percent between 1970-1974, offset by proportional increases from state and local governments and the institutions' own funds. But the foundations and voluntary health agencies continued to remain the prime sources of nonfederal funding for private institutions, accounting for well over a third (37 percent) of all nonfederal support.

Top and Bottom 20 Institutions. The Top 20 institutions[4] expended approximately $375 million for biomedical R&D in FY 1974 -- more than all other respondents combined (Table 4). Eight out of every 10 dollars spent by these institutions came from federal sources, compared to 7 out of 10 dollars for all other institutions. The federal-nonfederal mix remained relatively stable between FY 1970 and FY 1974 for all but the Bottom 20: the proportion of support these institutions received from the federal government dropped from 75 percent to 71 percent.

As shown in Table 5, the Top 20 received the largest share of their nonfederal support in FY 1974 from foundations and voluntary health agencies (32 percent); in contrast, the Bottom 20 institutions obtained most of their nonfederal funding from industry and business (35 percent), although state and local government also contributed substantially (27 percent). Particularly noteworthy has been the relative decline between 1970-1974 in foundation and voluntary health agency support among the Top and Bottom 20 institutions, and the sharp rise in industrial sponsorship of the Bottom 20.

Institutions With and Without Medical Schools. Table 6 shows that respondents with medical schools received proportionally more federal support than

[4]Responding institutions classified according to amount of research funds received from the National Institutes of Health in 1973 (research and development projects and resources). For this report, the Top 20 included 11 public and 9 private institutions -- 18 were universities and 2 were four-year colleges. The Bottom 20 included 12 public and 8 private institutions -- 10 were universities and 10 were four-year colleges.

respondents without medical schools -- 16 percent more in FY 1974 (79 vs. 63 percent). For institutions with medical schools, there were only slight shifts between the two years in the proportions of R&D funds coming from federal and nonfederal sources. On the other hand, institutions without medical schools experienced sharper fluctuations: a drop in federal support, from 68 to 63 percent, and a rise in nonfederal support, from 32 to 37 percent. Of particular significance is the fact that these institutions themselves sponsored a large share of nonfederally-financed R&D in their respective laboratories -- 44 percent in FY 1974 (Table 7).

Tables 8 and 9, providing institutional data on the proportion of funds specifically restricted for research by the donor, indicate that such moneys are most characteristic of institutions with medical schools, and of those institutions reporting the largest expenditures for R&D.

Efforts to Find New Funding Sources

Survey respondents also rated their institutions' effectiveness in finding new (nonfederal) funds for biomedical research (Table 10). Only three of the 138 responding institutions rated their efforts as "excellent", about one-fifth "good", almost half rated themselves only "fair", and another fifth characterized their efforts as "poor." Fifty-eight percent of the private institutions rated their effectiveness as only "fair" as compared to 43 percent of the public group.

Of the responding institutions in the Top 20, none rated their effectiveness as "excellent", but 44 percent rated their efforts as "good." Only 22 percent of the Bottom 20 institutions gave themselves this positive rating. The effectiveness rating of institutions with medical schools did not differ substantially from those without medical schools except that a rating of "poor" was somewhat more prevalent among institutions with medical schools. Proportionately more

of those institutions without medical schools, on the other hand, declined to rate themselves on the ground that they sought no new funds for biomedical R&D in recent years.

Had the institutions made any significant policy changes since 1970 regarding the allocation of nonfederal funds to biomedical research and development at their respective campuses? In response to this query, only one in ten institutions reported that such policy changes had occurred (Table 11). A slightly greater proportion of public than private institutions reported significant policy changes. Similarly, a greater proportion of those institutions among the Bottom 20 compared to the Top 20 reported changes (21 percent and 5 percent, respectively). In general, such policy changes involved: (1) greater application of the institutions' own funds toward R&D purposes, and (2) increased efforts to attract nonfederal sponsorship of biomedical R&D.

Institutional respondents were also asked to make an anticipatory judgment about the nonfederal funds at their institution over the next five years. Did they expect significant increases in funding during this period? The responses are summarized in Table 12. Only one-third of the respondents were anticipating significant increases. Public institutions tended to be slightly more optimistic than private institutions regarding an expansion in the nonfederal contribution. The data suggest, however, that institutions which now conduct the major share of biomedical R&D (the Top 20 institutions and those with medical schools) tend to be proportionately more pessimistic about significant increases in the near future than other institutions surveyed. More than half of the institutions among the Bottom 20 expect significant increases compared to one-fourth of the Top 20. Similarly, two-fifths of the institutions without medical schools expect increases while almost three-fourths (73 percent) of the institutions with medical schools do not.

Table 13 compares institutions which are and are not anticipating funding increases according to their principal source of nonfederal funding in FY 1974.

Proportionately, more of the institutions which do anticipate increases drew the largest shares of their funds from two sources: foundations and voluntary health agencies (42 percent) and their own funds (29 percent); these same sources accounted for 28 percent and 19 percent, respectively, of the nonfederal total at institutions not expecting significant increases.

More specifically, the institutional respondents who expected funding increases were asked which sources would probably account for the increase (Table 14). Foundations and voluntary health agencies were cited by more than three-fourths of institutions, state and local governments, and industry and business by well over half (56 percent and 58 percent, respectively) and their own institutional funds by one-third. Public institutions, as might be expected, were relying more heavily on state and local government sources than were the private institutions. More surprisingly, public institutions also expected to rely more heavily on industry and business for biomedical R&D support than did the private schools (61 percent and 53 percent, respectively).

Other Observations of Institutional Representatives

Institutional representatives were asked to look ahead to the next five years and provide additional comments on anticipated changes in nonfederal funding of biomedical R&D, including the nature, magnitude, and implications of these changes. Well over half of the respondents provided us with some of their views.

Most expected nonfederal funding to increase percentage-wise, but not significantly. The depressed state of the economy was the most frequently cited reason for expectation of only moderate growth in the nonfederal sector; also cited was the strong tradition of national support for biomedical research which has developed over the past two decades.

Despite these expectations, many respondents indicated increased efforts by their institutions to tap nonfederal funding sources. Such efforts included:

- Institutional assistance to faculty in identifying and contacting potential donors;
- Submission of an increasing number of research proposals to foundations and voluntary health agencies;
- Intensive efforts to explain programs, needs, and potential benefits;
- Recruitment of faculty with strong connections with both foundations and industry;
- Program shifts from basic research to more applied areas (including development) to attract industrial support.

In seeking out nonfederal funding sources, the newer, developing schools appeared to encounter especially severe difficulties in attracting funds; these institutions felt they could not effectively compete with more mature schools for research dollars. Smaller, private institutions also found themselves at a competitive disadvantage to larger, established, public institutions. A few private institutions, however, expected modest assistance from state sources.

With few exceptions, institutional representatives did not expect increases in state funding to materially change the balance of support at their institutions. Inflationary pressures, a limited tax base, and an increased emphasis on state support of health manpower and service programs were among the reasons cited for this expectation. Industry's concern with its public image and an increased involvement in environmental research (primarily in response to federal requirements) might tend to stimulate support of health R&D in the future; however, to most respondents, foundations and voluntary health agencies appeared as potentially the strongest nonfederal funding alternative.

Most institutional representatives, citing the economic climate, felt it would be unreasonable to expect nonfederal sources to increase significantly their share of support for biomedical R&D; however, these respondents also indicated increased efforts on the part of their institutions to broaden the base of their support in the hope that additional sources would offset decreases from individual sponsors.

Table 1

Distribution of Federal and Nonfederal Funds Expended for Biomedical R&D at Ph.D.-Granting Institutions

Fiscal Year 1974

Source of Funds	All Institutions (N=145)		Public Institutions (N=91)		Private Institutions (N=54)	
	Dollars (Millions)	Percent Distribution	Dollars (Millions)	Percent Distribution	Dollars (Millions)	Percent Distribution
Federal	$617.8	77.3	$372.9	75.6	$244.9	80.2
Nonfederal	181.0	22.7	120.6	24.4	60.4	19.8
TOTAL	$798.8	100.0%	$493.5	100.0%	$305.3	100.0%

NOTE: Totals on this and subsequent tables may not add due to rounding.

Table 2

Distribution of Federal and Nonfederal Funds Expended for Biomedical R&D at Ph.D.-Granting Institutions[a]

Fiscal Years 1970 and 1974

Source of Funds	FY 1970 Dollars (Millions)	FY 1970 Percent Distribution	FY 1974 Dollars (Millions)	FY 1974 Percent Distribution	1974 in Constant (1970) Dollars[b] (Millions)
All Institutions (N=121)					
Federal	$390.0	76.1	$533.4	76.6	$375.9
Nonfederal	122.3	23.9	162.6	23.4	114.5
State and Local Government	28.7	5.6	37.0	5.3	26.1
Foundations and Voluntary Health Agencies	30.0	5.9	38.9	5.6	27.4
Industry and Business	11.8	2.3	16.8	2.4	11.9
Other Private Gifts and Grants	9.5	1.9	13.7	2.0	9.7
Institution's Own Funds	35.0	6.8	47.4	6.8	33.4
Other	7.5	1.5	8.8	1.3	6.2
TOTAL	$512.3	100.0%	$696.0	100.0%	$490.4
Public Institutions (N=76)					
Federal	$227.8	72.9	$309.8	74.2	$218.3
Nonfederal	84.5	27.1	107.7	25.8	75.9
State and Local Government	23.7	7.6	28.1	6.7	19.8
Foundations and Voluntary Health Agencies	13.7	4.4	18.9	4.5	13.3
Industry and Business	8.8	2.8	11.7	2.8	8.2
Other Private Gifts and Grants	6.8	2.2	10.4	2.5	7.3
Institution's Own Funds[c]	27.8	8.9	34.8	8.3	24.5
Other	4.0	1.3	4.0	1.0	2.8
TOTAL	$312.3	100.0%	$417.5	100.0%	$294.2
Private Institutions (N=45)					
Federal	$162.2	81.1	$223.7	80.3	$157.6
Nonfederal	37.8	18.9	54.9	19.7	38.7
State and Local Government	5.0	2.5	8.9	3.2	6.3
Foundations and Voluntary Health Agencies	16.3	8.2	20.0	7.2	14.1
Industry and Business	3.0	1.5	5.2	1.9	3.6
Other Private Gifts and Grants	2.7	1.3	3.3	1.2	2.4
Institution's Own Funds	7.3	3.6	12.6	4.5	8.9
Other	3.5	1.8	4.8	1.7	3.4
TOTAL	$200.0	100.0%	$278.5	100.0%	$196.2

[a] Includes only those institutions reporting information for both FY 1970 and FY 1974.

[b] Derived from GNP Implicit Price Index.

[c] In interpreting data relating to public institutions' "own funds", it must be noted that, for the most part, these funds by definition originate from state and/or local governments.

Table 3

Sources of Nonfederal Funds Expended for Biomedical R&D at Ph.D.-Granting Institutions[a]

Fiscal Years 1970 and 1974

Source of Funds	Percentage Distribution FY 1970	FY 1974
All Institutions (N=121)		
State and Local Government	23.4	22.8
Foundations and Voluntary Health Agencies	24.5	23.9
Industry and Business	9.6	10.4
Other Private Gifts and Grants	7.8	8.4
Institution's Own Funds	28.6	29.1
Other	6.1	5.4
TOTAL	100.0%	100.0%
Public Institutions (N=76)		
State and Local Government	28.0	26.1
Foundations and Voluntary Health Agencies	16.1	17.5
Industry and Business	10.4	10.8
Other Private Gifts and Grants	8.1	9.6
Institution's Own Funds	32.8	32.3
Other	4.7	3.7
TOTAL	100.0%	100.0%
Private Institutions (N=45)		
State and Local Government	13.2	16.3
Foundations and Voluntary Health Agencies	43.2	36.5
Industry and Business	7.9	9.4
Other Private Gifts and Grants	7.1	6.1
Institution's Own Funds	19.2	23.0
Other	9.3	8.7
TOTAL	100.0%	100.0%

[a]Includes only those institutions reporting information for both FY 1970 and FY 1974.

Table 4

Distribution of Federal and Nonfederal Funds Expended for Biomedical R&D at Top 20 and Bottom 20 Ph.D.-Granting Institutions[a,b]

Fiscal Years 1970 and 1974

Source of Funds	FY 1970 Dollars (Millions)	FY 1970 Percent Distribution	FY 1974 Dollars (Millions)	FY 1974 Percent Distribution
Top 20 Institutions (N=18)				
Federal	$212.3	82.2	$306.8	81.9
Nonfederal	46.0	17.8	67.7	18.1
TOTAL	$258.2	100.0%	$374.5	100.0%
Bottom 20 Institutions (N=14)				
Federal	$ 1.5	75.0	$ 2.4	71.4
Nonfederal	.6	25.0	1.0	28.6
TOTAL	$ 2.1	100.0%	$ 3.4	100.0%
All Other Institutions (N=89)				
Federal	$176.2	69.9	$224.2	70.5
Nonfederal	75.8	30.1	93.9	29.5
TOTAL	$252.0	100.0%	$318.1	100.0%

[a]Includes only those institutions reporting information for both FY 1970 and FY 1974.

[b]The classifications "Top 20" and "Bottom 20" refer to respondent institutions ranked by level of NIH R&D support (Projects and Resources) in FY 1973.

Table 5

Sources of Nonfederal Funds Expended for Biomedical R&D at Top 20 and Bottom 20 Ph.D.-Granting Institutions[a,b]

Fiscal Years 1970 and 1974

Source of Funds	Percentage Distribution FY 1970	FY 1974
Top 20 Institutions (N=18)		
State and Local Government	18.0	20.5
Foundations and Voluntary Health Agencies	39.3	32.1
Industry and Business	5.9	7.1
Other Private Gifts and Grants	12.8	12.9
Institution's Own Funds	14.3	17.9
Other	9.6	9.6
TOTAL	100.0%	100.0%
Bottom 20 Institutions (N=14)		
State and Local Government	32.7	27.3
Foundations and Voluntary Health Agencies	21.7	15.4
Industry and Business	14.5	35.2
Other Private Gifts and Grants	.4	.9
Institution's Own Funds	30.7	21.1
Other	.1	0.0
TOTAL	100.0%	100.0%
All Other Institutions (N=89)		
State and Local Government	26.6	24.3
Foundations and Voluntary Health Agencies	15.6	18.1
Industry and Business	11.9	12.4
Other Private Gifts and Grants	4.7	5.4
Institution's Own Funds	37.2	37.4
Other	4.1	2.5
TOTAL	100.0%	100.0%

[a]Includes only those institutions reporting information for both FY 1970 and FY 1974.

[b]The classifications "Top 20" and "Bottom 20" refer to respondent institutions ranked by level of NIH R&D support (Projects and Resources) in FY 1973.

Table 6

Distribution of Federal and Nonfederal Funds Expended for Biomedical R&D at Ph.D.-Granting Institutions[a] (1) With Medical Schools and (2) Without Medical Schools

Fiscal Years 1970 and 1974

Source of Funds	FY 1970		FY 1974	
	Dollars (Millions)	Percent Distribution	Dollars (Millions)	Percent Distribution
With Medical Schools (N=53)				
Federal	$337.6	77.6	$459.8	79.4
Nonfederal	97.6	22.4	119.3	20.6
TOTAL	$435.2	100.0%	$579.1	100.0%
Without Medical School (N=68)				
Federal	$ 52.4	68.0	$ 73.6	63.0
Nonfederal	24.7	32.0	43.2	37.0
TOTAL	$ 77.0	100.0%	$116.9	100.0%

[a]Includes only those institutions reporting information for both FY 1970 and FY 1974.

Table 7

Sources of Nonfederal Funds Expended for Biomedical R&D
at Ph.D.-Granting Institutions[a]
(1) With Medical Schools and (2) Without Medical Schools
Fiscal Years 1970 and 1974

Source of Funds	Percentage Distribution FY 1970	FY 1974
Ph.D.-Granting Institutions With Medical Schools (N=53)		
State and Local Government	20.9	19.8
Foundations and Voluntary Health Agencies	27.7	27.6
Industry and Business	9.9	11.0
Other Private Gifts and Grants	9.3	10.7
Institution's Own Funds	25.0	23.6
Other	7.1	7.2
TOTAL	100.0%	100.0%
Ph.D.-Granting Institutions Without Medical Schools (N=68)		
State and Local Government	33.5	30.9
Foundations and Voluntary Health Agencies	11.5	13.6
Industry and Business	8.3	8.5
Other Private Gifts and Grants	1.6	2.0
Institution's Own Funds	42.8	44.4
Other	2.2	.6
TOTAL	100.0%	100.0%

[a]Includes only those institutions reporting information for both FY 1970 and FY 1974.

Table 8

Nonfederal Funds Restricted by Donor for Biomedical R&D
at Ph.D.-Granting Institutions
Fiscal Year 1974
(In Percentages)

A. All Institutions; Public and Private

Proportion Restricted to Biomedical Research	All Institutions (N=133)	Public Institutions (N=83)	Private Institutions (N=50)
Less than 10 percent	12.0	13.3	10.0
10 - 24 percent	6.0	4.8	8.0
25 - 49 percent	8.3	8.4	8.0
50 - 74 percent	12.0	13.3	10.0
75 percent or over	61.7	60.2	64.0
TOTAL	100.0%	100.0%	100.0%

B. Top 20/Bottom 20 Institutions[a]

Proportion Restricted to Biomedical Research	Top 20 Institutions (N=17)	Bottom 20 Institutions (N=18)	All Other Institutions (N=98)
Less than 10 percent	0.0	16.7	13.3
10 - 24 percent	0.0	11.1	6.1
25 - 49 percent	5.9	16.7	7.1
50 - 74 percent	5.9	11.1	13.3
75 percent or over	88.2	44.4	60.2
TOTAL	100.0%	100.0%	100.0%

C. Institutions With/Without Medical Schools

Proportion Restricted to Biomedical Research	Ph.D.-Granting Institutions	
	With Medical School (N=57)	Without Medical School (N=76)
Less than 10 percent	0.0	21.1
10 -24 percent	3.5	7.9
25 - 49 percent	5.3	10.5
50 - 74 percent	17.5	7.9
75 percent or over	73.7	52.6
TOTAL	100.0%	100.0%

[a]The classifications "Top 20" and "Bottom 20" refer to respondent institutions ranked by level of NIH R&D support (Projects and Resources) in FY 1973.

Table 9

Proportion of Nonfederal Funds Restricted by Donor for Biomedical R&D at Ph.D.-Granting Institutions

Fiscal Year 1974

(In Percentages)

(N=133)

Proportion Restricted to Biomedical Research	Intervals Based on Total Expenditures (FY 1974)		
	Top Quartile	Middle Two Quartiles	Bottom Quartile
Less than 10%	3.0	10.3	25.0
10% - 24%	0.0	7.4	9.4
25% - 49%	15.2	4.4	9.4
50% - 74%	12.1	14.7	6.2
75% and over	69.7	63.2	50.0
TOTAL	100.0%	100.0%	100.0%

Table 10

Effectiveness of Efforts Made in Recent Years to Find New Nonfederal Funds for Biomedical R&D at Ph.D.-Granting Institutions

(In Percentages)

A. All Institutions; Public and Private

Rated Effectiveness	All Institutions (N=138)	Public Institutions (N=86)	Private Institutions (N=52)
Excellent	2.2	2.3	1.9
Good	21.0	22.1	19.2
Fair	48.6	43.0	57.7
Poor	21.7	24.4	17.3
New Funds Not Sought	6.5	8.1	3.8
TOTAL	100.0%	100.0%	100.0%

B. Top 20/Bottom 20 Institutions[a]

Rated Effectiveness	Top 20 Institutions (N=18)	Bottom 20 Institutions (N=18)	All Other Institutions (N=102)
Excellent	0.0	0.0	2.9
Good	44.4	22.2	16.7
Fair	44.4	61.1	47.1
Poor	11.1	5.6	26.5
New Funds Not Sought	0.0	11.1	6.9
TOTAL	100.0%	100.0%	100.0%

C. Institutions With/Without Medical Schools

Rated Effectiveness	Ph.D.-Granting Institutions	
	With Medical School (N=57)	Without Medical School (N=81)
Excellent	1.8	2.5
Good	21.1	21.0
Fair	49.1	48.1
Poor	26.3	18.5
New Funds Not Sought	1.8	9.9
TOTAL	100.0%	100.0%

[a]These classifications refer to respondent institutions ranked by level of NIH R&D support (Projects and Resources) in FY 1973.

Table 11

Ph.D.-Granting Institutions Reporting Significant Policy Changes Since 1970 in Allocation of Nonfederal Funds to Biomedical R&D

(In Percentages)

Institutional Characteristic	Significant Change	No Change
Public Institutions (N=88)	11.4	88.6
Private Institutions (N=54)	5.6	94.4
Top 20 Institutions[a] (N=20)	5.0	95.0
Bottom 20 Institutions[a] (N=19)	21.1	78.9
With Medical Schools (N=59)	8.5	91.5
Without Medical Schools (N=83)	9.6	90.4
All Institutions (N=142)	9.2	90.8

[a]These classifications refer to respondent institutions ranked by level of NIH R&D support (Projects and Resources) in FY 1973.

Table 12

Ph.D.-Granting Institutions Anticipating a Significant Increase in the Amount of Nonfederal Funds Available for Biomedical R&D Within the Next Five Years

(In Percentages)

Institutional Characteristic	Anticipating Increase	
	Yes	No
Public Institutions (N=90)	36.7	63.3
Private Institutions (N=52)	28.8	71.2
Top 20 Institutions[a] (N=20)	25.0	75.0
Bottom 20 Institutions[a] (N=19)	52.6	47.4
With Medical Schools (N=60)	26.7	73.3
Without Medical Schools (N=82)	39.0	61.0
All Institutions (N=142)	33.8	66.2

[a]These classifications refer to respondent institutions ranked by level of NIH R&D support (Projects and Resources) in FY 1973.

Table 13

Ph.D.-Granting Institutions Anticipating a Significant Increase in Amount of Nonfederal Funds Available for Biomedical R&D Within the Next Five Years, by Principal Source of Nonfederal Funds in Fiscal Year 1974

(In Percentages)

Principal Source	Anticipate Increase (N=48)	Do Not Anticipate Increase (N=94)
State and Local Government	16.7	22.3
Foundations and Voluntary Health Agencies	41.7	27.7
Industry and Business	6.2	10.6
Other Private Gifts and Grants	4.2	1.1
Institution's Own Funds	29.2	19.1
Other	2.1	5.3
Multiple	0.0	13.8
TOTAL	100.0%	100.0%

Table 14

Anticipated Sources of Increase in the Amount of Nonfederal Funds Available for Biomedical R&D at Ph.D.-Granting Institutions[a] by Control

(In Percentages)[b]

Source	All Institutions (N=48)	Public Institutions (N=33)	Private Institutions (N=15)
State and Local Government	56.3	63.6	40.0
Foundations and Voluntary Health Agencies	77.1	75.8	80.0
Industry and Business	58.3	60.6	53.3
Institution's Own Funds	33.3	39.4	20.0
Other	18.8	18.2	20.0

[a]Includes only those institutions anticipating significant increases.

[b]Percents do not add to 100 due to multiple responses.

Appendix A:

Survey Questionnaire

AMERICAN COUNCIL ON EDUCATION
ONE DUPONT CIRCLE
WASHINGTON, D. C. 20036

HIGHER EDUCATION PANEL

December 6, 1974

Dear Higher Education Panel Representative:

Enclosed is the most recent survey of the Higher Education Panel. This survey, requested by the National Institutes of Health and other interested federal agencies, concerns nonfederal funding of biomedical research and development.

The purposes of this survey are to assess the impact of recent changes in the pattern of federal financing of biomedical R&D at colleges and universities, to determine the availability of alternative nonfederal funding sources at these institutions, and to assess the prospects for increased participation by state/local governments and the private sector in support of health related research. This information has become increasingly important as policy-makers seek to devise measures to strengthen the nation's biomedical research enterprise and to assure its viability in a period of constrained resources.

You will note that several of the questions require judgmental and speculative responses. It is important therefore, that they be answered by someone who knows about the full range of biomedical research and development at your institution. If your institution has a medical school, for example, it may be appropriate for its Dean to answer the speculative items. The survey sponsors have also asked that you make a special effort to include all medical facilities of your institution, even if some are located off-campus.

Please be assured that your responses will be held in strictest confidence. As with all our reports, the data you provide will be reported in summary fashion only and will not be identified with your institution.

We would appreciate having this completed questionnaire returned to us by December 20. We have enclosed a stamped, self-addressed envelope for your convenience.

If you have any questions or other problems with the survey, please do not hesitate to call our staff (collect) about them. Our number for this purpose is (202) 833-4757.

Thank you again for your cooperation.

Sincerely,

Frank Atelsek

Frank Atelsek
Director

Enclosures

OMB. No. 99-R0265. Exp. 6/75

AMERICAN COUNCIL ON EDUCATION
HIGHER EDUCATION PANEL SURVEY NUMBER 25

Nonfederal Funding of Biomedical Research and Development

1. Complete the table below showing, by source of funds, the estimated amounts your institution expended for biomedical research and development[1]. Data are requested for FY 1970 and FY 1974 to provide an indication of recent trends in the pattern of nonfederal funding. (Please include all costs, e.g., conduct of research, construction of R&D facilities, purchase of equipment.)

Estimated Expenditures for Biomedical Research and Development

	FY 1970	FY 1974
(a) All Sources (sum of "b" and "c")	$_____	$_____
(b) Federal Sources[2]	$_____	$_____
(c) Nonfederal Sources	$_____	$_____

2. Indicate the approximate percentage of nonfederal funds available for biomedical research and development as indicated in 1(c) above, by sources:

Sources of Nonfederal Funds for Biomedical R&D (Percentages)

	FY 1970	FY 1974
(a) State and Local Government	_____ %	_____ %
(b) Foundations & Voluntary Health Agencies	_____ %	_____ %
(c) Industry and Business	_____ %	_____ %
(d) Other Private Gifts and Grants	_____ %	_____ %
(e) Institution's Own Funds	_____ %	_____ %
(f) Other	_____ %	_____ %
TOTAL	100 %	100 %

3. Approximately what proportion of the nonfederal funds expended for biomedical research by your institution in FY 1974 was restricted for this purpose by the donor?

_____ Less than 10 percent
_____ 10-24 percent
_____ 25-49 percent
_____ 50-74 percent
_____ 75 percent or over

---

[1] The term "biomedical research and development" embraces (a) all research undertaken in the life sciences (exclusive of agriculture and forestry), and (b) all research relating to the causes, prevention, diagnosis, treatment and control of the physical and mental diseases afflicting man, including development of improved methods, techniques, and equipment for research, treatment and promotion of public health. (See illustrative list of disciplines covered by the term "biomedical research and development" at end of questionnaire.)

[2] Federal funds received through a State agency should be treated as Federal funds.

4. Has your institution made any significant policy changes since 1970 regarding the allocation of nonfederal funds to biomedical research and development?

___ Yes ___ No (if no, skip to item 7)

5. Are these policy changes totally, or in part, the result of changes in Federal funding?

___ No ___ Yes, in part ___ Yes, totally

6. Briefly summarize the nature of these changes:

7. How would you rate the effectiveness of the efforts made in recent years to find new (nonfederal) funds for biomedical research at your institution?

___ Excellent

___ Good

___ Fair

___ Poor

___ Question not applicable. New funds for biomedical research were not sought.

8. Looking ahead to the next five years, do you anticipate a significant increase in the amount of nonfederal funds available for biomedical research and development within your institution?

___ Yes (proceed to item 9)

___ No (skip to item 10)

9. If yes, which source(s) will probably account for this increase? (Check as many as apply)

___ (a) State and Local Governments

___ (b) Foundations and Voluntary Health Agencies

___ (c) Industry and Business

___ (d) Institution's Own Funds

___ (e) Other (specify):_____

10. Please give us any additional comments you may have about (a) the reasons for your expectations, (b) the nature, magnitude, and implications of the changes you anticipate, and (c) any other observations you may wish to express:

Illustrative List of Disciplines Covered by the Term "Biomedical Research and Development"

HEALTH FIELDS

- Medicine
- Dentistry
- Nursing
- Optometry
- Osteopathy
- Pharmacy
- Podiatry
- Public Health
- Veterinary Medicine

BIOLOGICAL SCIENCES

- Biology, General
- Botany, General
- Bacteriology
- Plant Pathology
- Plant Physiology
- Zoology, General
- Pathology
- Biochemistry
- Pharmacology
- Physiology
- Microbiology
- Anatomy
- Histology
- Biophysics
- Molecular Biology
- Cell Biology
- Marine Biology
- Biometrics & Statistics
- Ecology
- Entomology
- Genetics
- Radiobiology
- Nutrition
- Neurosciences
- Toxicology
- Embryology

OTHER

- Hospital and Health Care Administration
- Medical, Dental, Radiologic Technologies

THANK YOU FOR YOUR ASSISTANCE.
Please return this form by December 20, 1974.

TO: HIGHER EDUCATION PANEL
AMERICAN COUNCIL ON EDUCATION
ONE DUPONT CIRCLE
WASHINGTON, D.C. 20036

PERSON COMPLETING FORM _____

OFFICE _____

PHONE _____

Appendix B:

Institutional Response to Survey

Institutional Response to the Survey

Survey questionnaires were sent to all 220 Ph.D.-granting institutions in the Panel. Twenty-two institutions indicated that no biomedical research was conducted on their campuses. Of the remaining 198 institutions, 145 or 73 percent provided us with useable information before the closing date for questionnaire returns.

Table B-1 compares the universe of Ph.D.-granting institutions (N=288) with those institutions that are Panel members (N=220). Of the institutions in the population: (1) one-third are public universities, with the rest evenly distributed among public and private colleges and private universities; (2) three out of 10 are located in the East, and another three out of 10 in the South; (3) 60 percent have graduate enrollments of more than 1,000 students; (4) nearly two-fifths have medical schools; (5) more than one-fourth had no NIH R&D support in FY 1973, and approximately one-sixth received over $5 million.

The institutions in the HEP Panel are in many respects quite similar to those in the population, except they: (1) were more likely to be universities, particularly under public control (two-fifths); (2) more often have graduate enrollments over 1,000 (68 percent); (3) were less likely to have received no NIH R&D funding in FY 1973 (one-sixth).

Table B-2 compares the respondents and nonrespondents according to selected institutional characteristics. Somewhat higher response rates were recorded for: (1) public universities; (2) institutions in the North Central region of the country, (3) institutions with advanced degree enrollments of 200-1,000 students, and (4) schools with NIH support of $5-10 million and those whose support levels range from $100,000 to $500,000. Lower than average response rates are shown for: (1) private universities, (2) schools in the Eastern region,

(3) those having advanced degree enrollments of 3,000-5,000 students, and (4) institutions with NIH support levels of more than one million dollars but less than $5 million and those with $10 million or more.

The asterisks appearing in the last column of Table B-2 designate those response rates that exceed or fall short of the overall response rate by more than 10 percent.

Table B-1

Comparison of HEP Panel Institutions and Nonpanel Institutions with the Ph.D.-Granting Population

(In Percentages)

Characteristic	All Ph.D.-Granting Institutions (N=288)	HEP Ph.D.-Granting Institutions (N=220)
Control and Type		
Public Four-Year	22.2	17.3
Private Four-Year	24.0	18.2
Public University	32.6	40.0
Private University	21.2	24.5
Census Region		
East	30.6	31.8
North Central	19.8	22.3
South	31.6	27.7
West	18.1	18.2
Advanced Degree Enrollment[a]		
Less than 200	16.0	8.6
200 - 1000	24.0	23.2
1001 - 3000	34.7	37.7
3001 - 5000	15.6	18.6
5001 or more	9.7	11.8
Medical School		
With	38.2	38.6
Without	61.8	61.4
Level of NIH R&D Support (Projects & Resources) in FY 1973		
$10 million or more	8.0	8.6
$5 - 9.9 million	8.3	9.1
$1 - 4.9 million	21.9	23.2
$.5 - .9 million	6.6	7.7
$.1 - .49 million	15.6	19.1
Under $100,000	12.8	15.9
None	26.7	16.4

[a]Based on data derived from the Higher Education General Information Survey (HEGIS) 1971.

Table B-2

Comparison of Respondents and Nonrespondents to Survey #25 - Nonfederal Funding of Biomedical R&D

(In Percentages)

Characteristic	Respondents (N=145)	Nonrespondents (N=53)	Response Rate[a]
Control and Type			
Public Four-Year	16.6	15.1	75.0
Private Four-Year	13.8	15.1	71.4
Public University	46.2	35.8	77.9
Private University	23.4	34.0	65.4*
Census Region			
East	26.9	42.3	63.9*
North Central	24.2	17.3	79.5
South	31.0	27.0	76.3
West	17.9	13.5	78.8
Advanced Degree Enrollment[b]			
Less than 200	9.0	11.3	68.4
200 - 1000	24.1	13.2	83.3*
1001 - 3000	42.1	39.6	74.4
3001 - 5000	14.5	24.5	61.8*
5001 or more	10.3	11.3	71.4
Medical School			
With	41.4	47.2	70.6
Without	58.6	52.8	75.2
Level of NIH R&D Support (Projects & Resources) in FY 1973			
$10 million or more	9.0	11.3	68.4
$5 - 9.9 million	12.4	3.8	90.0*
$1 - 4.9 million	22.8	34.0	64.7*
$.5 - .9 million	8.3	9.4	70.6
$.1 - .49 million	22.1	15.1	80.0
Under $100,000	15.2	17.0	71.0
None	10.3	9.4	75.0

[a]Asterisks in this column designate those response rates that exceed or fall short of the overall response rate by more than 10 percent.

[b]Based on data derived from the Higher Education General Information Survey (HEGIS) 1971.

NOTE: Of the 220 Ph.D.-granting institutions in the Panel, 22 expended no funds for biomedical R&D. Therefore total respondents (N=145) and nonrespondents (N=53) equal 198.