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ASSOCIATION OF AMERICAN UNIVERSITIES

**COMMITTEE ON POSTDOCTORAL
EDUCATION**

REPORT AND RECOMMENDATIONS

MARCH 31, 1998

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ASSOCIATION OF AMERICAN UNIVERSITIES

COMMITTEE ON POSTDOCTORAL EDUCATION

REPORT

Postdoctoral education plays an important role in the research enterprise of the United States. Postdoctoral appointments provide recent Ph.D. recipients with an opportunity to develop further the research skills acquired in their doctoral programs or to learn new research techniques. In the process of developing their own research skills, postdoctoral appointees perform a significant portion of the nation's research and augment the role of graduate faculty in providing research instruction to graduate students.

Postdoctoral education has been a part of American higher education for over 100 years. The Johns Hopkins University began to support postdoctoral fellows shortly after the institution was founded in 1876. In the 1920s the Rockefeller Foundation established a formal program of postdoctoral fellowships for recent Ph.D. graduates in the physical sciences. The Foundation recognized the fact that physics had become so complex that training through the doctorate was not sufficient preparation for a research career. Recipients of these awards were known as "postdoctoral fellows," or simply "postdocs."

Postdoctoral education grew only modestly during the first half of the twentieth century. But the advent of the Cold War brought with it a boom in postdoctoral appointments. More recently, postdoctoral education has grown rapidly. From 1975 to 1995, the number of postdoctoral appointees in science, engineering, and health-related disciplines more than doubled, from 16,829 to 35,379 (Figure below). Moreover, the proportion of Ph.D.s accepting or seeking postdoctoral appointments in these disciplines increased from 25 percent in 1975 to over 37 percent in 1995. Although postdoctoral education has grown rapidly, it remains a highly concentrated enterprise: as shown in the Appendix attached, more than two-thirds of 1995 postdoctoral appointees were studying in just 50 institutions out of the nearly 350 doctorate-granting institutions surveyed.

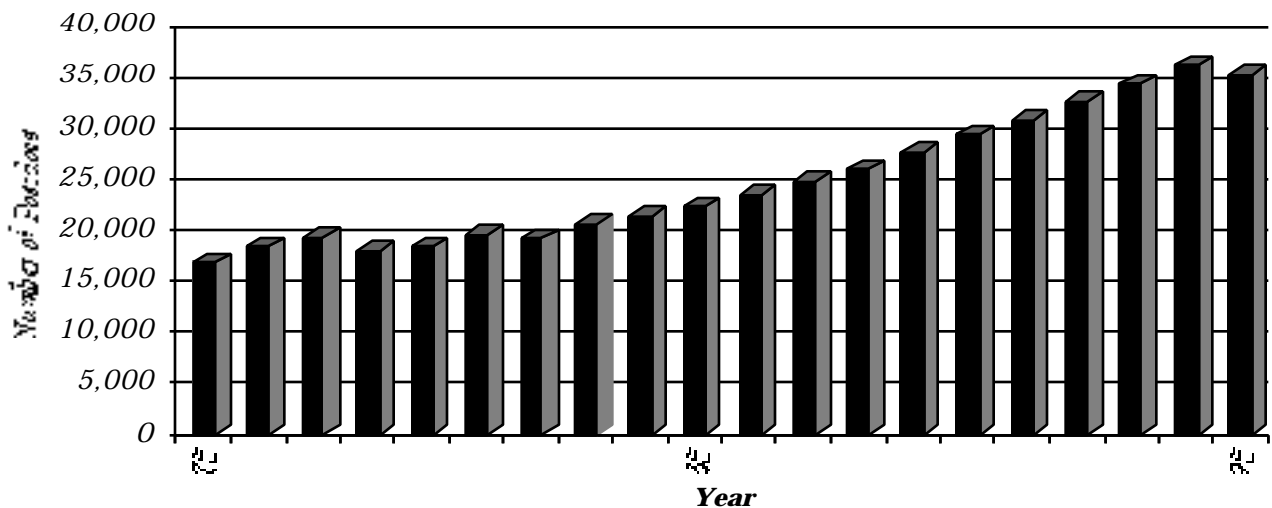


Figure. Science and Engineering Postdocs

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Despite the increasingly prominent role played by postdoctoral education in the national research enterprise, there is reason to question how well this particular form of education has been incorporated into the overall academic enterprise. In many respects, postdoctoral education at the end of the twentieth century appears to resemble Ph.D. education at the end of the nineteenth century. In 1890, Ph.D. programs were a relatively new form of education in this country, lacking a consistent set of standards and expectations. Today there is cause for concern over the similarly *ad hoc* evolution of postdoctoral education. Some specific points of concern are:

- The steady growth in the number of postdoctoral appointments nationally—and the increasing number of those appointments that are being granted to foreign Ph.D.s on temporary visas
- The increasing number of postdoctoral appointees in their second, third, and even fourth appointment
- The widely held perception that the postdoctoral appointment is being used as an employment holding pattern
- The apparent transition, at least in some disciplines, of the postdoctoral appointment from an elective activity to a required credential
- The growing number of reports of dissatisfaction expressed by postdocs.

To address these concerns, the Association of American Universities formed the Committee on Postdoctoral Education in 1994. The Committee was charged to examine postdoctoral education and develop recommendations for the future management of this activity.

The Committee conducted three informal surveys of selected major research universities to gain insight into campus policies and practices governing postdoctoral education and to sample the views of postdocs. Given the varying conceptions of postdoctoral education, the Committee recognized the need to establish a working definition of a postdoctoral appointment for its surveys. After a great deal of discussion among committee members, graduate deans, provosts, and presidents and chancellors of research universities, the Committee developed the following definition of a postdoctoral appointment, which was used consistently in the surveys.

DEFINITION OF A POSTDOCTORAL APPOINTMENT

- The appointee was recently awarded a Ph.D. or equivalent doctorate (e.g., Sc.D., M.D.) in an appropriate field; and
- the appointment is temporary; and
- the appointment involves substantially full-time research or scholarship; and
- the appointment is viewed as preparatory for a full-time academic and/or research career; and
- the appointment is not part of a clinical training program; and
- the appointee works under the supervision of a senior scholar or a department in a university or similar research institution (e.g., national laboratory, NIH, etc.); and

- the appointee has the freedom, and is expected, to publish the results of his or her research or scholarship during the period of the appointment.

The committee surveys solicited information and views from university administrations; university departments in four disciplines—biochemistry, mathematics, physics, and psychology; and postdocs in each of those departments. The surveys were not intended to provide comprehensive quantitative descriptions, but rather to provide insights through sampling of campus policies and practices and the views of postdocs.

Among the key findings of the surveys were the following:

- 1) Most institutions make little or no attempt to control the number or the quality of postdoctoral appointees on campus.
- 2) As was the case with Ph.D. students in the 1890s, most postdocs today are identified and recruited principally through professional contacts with faculty members.
- 3) It is common for institutions either to have no time limits on the length of postdoctoral appointments or regularly to ignore or waive established limits.
- 4) Few institutions report having campuswide compensation policies for postdoctoral appointees, and few report making any serious efforts to ensure that foreign and domestic postdocs receive equal compensation (as is required by federal law).
- 5) Most institutions report that they classify postdoctoral appointees as employees with attendant employment benefits; postdocs themselves, however, list benefits as one of their top areas of needed improvement.
- 6) Few institutions have policies established specifically for postdoctoral appointees: most institutions report that conflict-of-interest policies for faculty and staff apply to postdocs, but few institutions have policies governing outside business interests, consulting, or teaching activities by postdocs. Moreover, procedures for resolving postdoc misconduct or grievances vary widely and are often nonexistent.
- 7) Virtually no institutions have formal job placement procedures for postdocs.
- 8) In roughly two-thirds of surveyed departments, all assistant professors hired in the last five years have had postdoctoral experience; in two fields—biochemistry and physics—more than 80 percent of the departments surveyed said they would not even consider hiring someone without postdoctoral experience. Thus, in these fields, a postdoctoral appointment has become the *de facto* terminal academic credential.
- 9) Nearly half of the Ph.D.s who graduated from the surveyed departments in the last two years have gone on to postdoctoral appointments; in biochemistry, 80 percent have gone on to postdoctoral positions.
- 10) Upon completion of their appointments, roughly 60 percent of recent postdocs in surveyed departments have gone on to employment in research universities in some capacity. About one-fourth of postdocs in surveyed departments have gone into another postdoc position, about one-fourth into tenure-track faculty positions, and about 10 percent into non-tenure-track faculty positions.

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- 11) A substantial majority of departmental officials and postdocs themselves view a postdoctoral appointment as a necessary step in an academic career, as opposed to being simply a holding pattern for Ph.D.s who cannot find a tenure-leading appointment or other appropriate employment.
- 12) Postdocs identify stipends, benefits, and career advising and job placement assistance as the aspects of postdoctoral education in most need of improvement.
- 13) Two-thirds of postdocs say that obtaining a tenure-track faculty position at a research university is their expected career path.

DISCUSSION

Although the Committee's surveys were small and informal and were focused exclusively on leading research universities, several findings stand out. Most fundamentally, the lack of institutional oversight of postdoctoral appointments, coupled with the evolution of postdoctoral education in a number of disciplines into a virtual requirement for a tenure-track faculty appointment, creates an unacceptable degree of variability and instability in this aspect of the academic enterprise.

As with the Ph.D. at the end of the nineteenth century, postdoctoral education is evolving as a series of *ad hoc* and unsystematic responses to varied and often competing interests and pressures. Most universities lack the kind of central administrative oversight of postdoctoral appointments that they maintain for undergraduate and graduate students. Moreover, most institutions appear to have few policies designed for postdocs specifically; such policies appear often to be an amalgam of policies designed for students, faculty, and staff.

The lack of clear central oversight of postdoctoral education raises serious questions about how successfully institutions are meeting their obligations to postdocs as trainees and professional colleagues.

Upon completion of their appointments, most postdocs appear to find employment in research positions in their field of training. However, although the preponderance of postdocs *expect* to end up in a tenure track position, only one-fourth of recent postdocs in the surveyed departments actually entered such a position. Given this disparity between expectations and outcomes, it is not surprising that postdocs rank better career advising and job placement high on their list of recommended improvements; currently, institutions give little or no attention to these activities.

RECOMMENDATIONS

The Committee strongly recommends that the following definition of a postdoctoral appointment be universally adopted and consistently applied by all universities, government agencies, and private foundations involved in postdoctoral education:

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- the appointment is temporary; and
- the appointment involves substantially full-time research or scholarship; and
- the appointment is viewed as preparatory for a full-time academic and/or research career; and
- the appointment is not part of a clinical training program; and
- the appointee works under the supervision of a senior scholar or a department in a university or similar research institution (e.g., national laboratory, NIH, etc.); and
- the appointee has the freedom, and is expected, to publish the results of his or her research or scholarship during the period of the appointment.

The Committee recommends that each university act promptly to develop policies and practices for systematically incorporating postdoctoral education into its overall academic program. To assist in accomplishing this systematization of postdoctoral education, the Committee makes the following suggestions as a model for consideration by individual institutions:

- 1) Consistent with the definition above, the postdoctoral appointment should remain a temporary appointment with a primary purpose of providing additional research or scholarly training for an academic or research career.
- 2) A central administrative officer should be assigned responsibility for monitoring postdoctoral policies to assure consistent application of those policies across the institution.
- 3) The university should establish core policies applicable to postdoctoral appointments. These policies should cover such matters as employment or student category; realistic institutional minimum stipends and benefits; fractional appointments; workers' compensation; publication rights; faculty responsibilities for mentoring and evaluation of postdoctoral appointees; career advising and job placement; misconduct; grievance procedures; and education in research

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protocol issues such as ethics, conflicts of interest, and outside consulting. In particular, all postdoctoral appointees should have access to a comprehensive health care plan for themselves and their families.

- 4) The university should establish explicit guidelines for recruitment and appointment of postdocs and for the duration of their appointments; such guidelines should take into account time spent in prior postdoctoral appointments at other institutions. Initial postdoctoral appointments should be no longer than two to three years in duration, and should be renewed only on the basis of career advancement and achievement by the postdoctoral appointee. As a general rule, the total time spent in postdoctoral appointments by a given individual should not exceed six years. Exceptions to such guidelines should be granted only after careful review by the department and an appropriate central administrative officer.
- 5) All postdoctoral appointees should receive a letter of appointment jointly signed by the faculty mentor and the department chair or other responsible university official; a statement of goals, policies, and responsibilities applicable to postdoctoral education should accompany the letter.
- 6) The university should periodically evaluate the balance of interests among postdoctoral appointees, their faculty mentors, their home departments, and the institution as a whole, in order to assure that the legitimate educational needs and career interests of postdocs are being fully met.
- 7) Departments and faculty mentors should provide career advising and job placement assistance appropriate to their postdoctoral appointees.
- 8) The university should provide a certificate or letter of completion for postdoctoral appointments to assist postdocs in securing subsequent employment.

In addition to the foregoing suggestions for consideration by individual institutions, the Committee recommends that each academic discipline consider the role of postdoctoral education in professional development in that discipline, and give careful attention to the extent to which postdoctoral education should be viewed as elective or obligatory by students for whom entry into that discipline is their primary professional goal.

March 31, 1998

*Appendix
Postdoctoral Appointments in U.S.
Universities*

<i>Grand Totals—345 Institutions</i>	Total 35,379	Science 23,367	Engineering 2,628	Health Fields 9,384
First 50 Institutions	Total	Science	Engineering	Health Fields
1 Harvard University	1,836	1,124	27	685
2 University of California, San Francisco	1,147	303	0	844
3 Stanford University	1,013	585	73	355
4 University of California, San Diego	995	562	62	371
5 University of Washington	901	551	29	321
6 Yale University	881	578	11	292
7 University of Pennsylvania	833	423	21	389
8 University of California, Berkeley	820	690	58	72
9 University of Michigan	724	317	120	287
10 The Johns Hopkins University	689	301	38	350
11 University of California, Los Angeles	687	339	32	316
12 University of Colorado	605	303	36	266
13 Washington University in St. Louis	564	310	5	249
14 Cornell University	557	336	57	164
15 University of North Carolina, Chapel Hill	553	341	6	206
16 University of Wisconsin-Madison	540	321	60	159
17 Massachusetts Institute of Technology	494	353	116	25
18 University of Minnesota	466	352	69	45
19 Duke University	438	260	5	173
20 University of Southern California	428	232	31	165
21 University of Iowa	359	128	15	216
22 Columbia University	354	268	27	59
23 University of Arizona	344	313	18	13
24 Case Western Reserve University	332	175	38	119
25 University of Alabama at Birmingham	331	176	2	153
26 University of Texas SW Medical Ctr at Dallas	327	222	0	105
27 The Ohio State University	323	234	52	37
28 University of California, Irvine	322	278	21	23
29 University of Pittsburgh	315	193	18	104
30 Indiana University	307	221	4	82
31 Princeton University	302	256	46	0
32 California Institute of Technology	300	259	41	0
33 University of Rochester	298	202	10	86
34 Yeshiva University	296	179	0	117
35 Vanderbilt University	287	220	5	62
36 University of California, Davis	282	172	11	99
37 University of Virginia	281	191	26	64
38 Northwestern University	280	220	58	2
39 Tufts University	279	111	4	164
40 Thomas Jefferson University	273	179	0	94
41 University of Texas M.D. Anderson Cancer Ctr	267	151	0	116
42 University of Florida	255	184	33	38
43 University of Massachusetts	250	181	5	64
44 Rutgers, The State University of New Jersey	248	176	43	29
45 Texas A & M University	248	220	24	4
46 University of Illinois, Urbana-Champaign	246	190	48	8
47 Rockefeller University	244	244	0	0
48 SUNY - Buffalo	243	192	17	34
49 Michigan State University	241	220	16	5
50 Mayo Graduate School of Medicine	239	96	0	143
Total, First 50 institutions	23,844	14,632	1,438	7,774