LETTERS

Crisis in NIH Funding

One of America's great strengths, developed over the last three decades, is its research capability in the basic biomedical sciences. We present below several proposals designed to conserve this strength, which is being eroded as a consequence of inflation, reduction in moneys available for direct costs of research, and by present policies for funding research grants. We wish to emphasize the great need for long-term stability of research programs, even at more modest levels of support, to preserve U.S. research capacity.

Few would doubt that remarkable recent achievements in treatment of disease derive from biomedical research supported by the National Institutes of Health (NIH). This biomedical research continues to offer the most cost-effective means to relieve suffering and to permit delivery of improved health care services. Moneys spent on biomedical research have usually been returned to the economy through increased productivity of individuals who have benefited from improved health or the prevention of disease, development of new drugs, or stimulation of other economically effective programs.

The scientific community manifests a potential for meritorious but unpursued research as evidenced by the large number of grant applications endorsed with high priority by NIH peer review that remain unfunded. The talent of many excellent scientists, with records of past innovative research accomplishment, is now being wasted.

Failure over the past decade of biomedical budgets to keep up with inflation has now, quite suddenly, grown to crisis proportions. Severe competition for NIH grant money, resulting from greatly accelerating cost of research, growth of the scientific community, designation of newly targeted research areas, and the sharp rise of administrative costs, has so strained governmental research budgets that only projects with truly exceptional priority scores are now being funded. Obviously, appropriation by the U.S. government of additional funds for research could solve this problem. We intend to continue to keep our government officials informed of the urgent need for an increased allocation of dollars for biomedical research. However, we also recognize the nation's present economic difficulties and the resulting belt tightening that we must accept on a temporary basis. In any case, action is required immediately before ongoing research groups and programs are irrevocably dismantled and before essential new projects become postponed indefinitely. Current policies for funding research grants should be reevaluated immediately to prevent further erosion of our national scientific research potential.

Scientists are now spending an inordinate part of their time writing and rewriting grant proposals in order to receive a priority sufficient for funding. Simultaneously, due to inflation and an increasing number of quality applications, the relative availability of funds compared to current needs has declined, inexorably raising the priority score required for funding. The increased number of initial and new applications has put additional strain on the review process so that more researchers are needed to evaluate these proposals, most of which will remain unfunded. Thus, scientists must spend an even larger part of their time writing proposals and reviewing others, time better spent on research.

We agree that the best scientific investigators and targeted programs must continue to be funded. We also believe, however, that in a situation where funding is clearly inadequate, the present system of priority scoring permits some groups to attract a disproportionate percentage of the available funds. America's strong leadership in biomedical science is related, in large part, to our past generous support of a variety of research ideas whose outcomes were most unpredictable at the time of funding. Quite a few of these ideas, which formed the foundation of many subsequent advances, were unpopular at their inception. Scientific excellence can best be perpetuated when there is a breadth of research accomplishment that serves as the basis for future outstanding achievement. Although we favor peer review, this process cannot be expected to discriminate with accuracy between projects receiving close numerical scores. Forcing out large numbers of talented and productive independent researchers leads inevitably to an undesirable centralization of basic research in fewer laboratories. The unwillingness of many talented newer faculty members and younger scientists to continue their research career because of the extreme competition for funding of research constitutes a severe economic and intellectual loss to our country for which it will ultimately pay dearly.

We strongly endorse the funding of only high-quality research, as judged by peer review, but we also believe that more grants approved by peer review

should be funded. When the NIH granting system began in the 1950's some 90 percent of all approved applications were funded. Now most NIH institutes can pay only about 15 percent. These temporal fluctuations and declining support for quality applications suggest an obvious need to reevaluate policies to support a higher number of worthy investigators. We have considered various alternatives, and none are easy or ideal. However, because of the present crisis we feel a decision must now be made on a revised procedure for funding.

1) We recommend the development of a "sliding scale," depending on the priority score that peer review groups assign to applications: those with top-priority scores would receive 100 percent of *study section approved* budgets; others would receive only a proportion of their approved budgets, depending on priority scores. However, only those applications with very respectable priority scores, that is, encompassing about half of all *study section approved* applications, should be eligible for this formula-based partial funding. This procedure would require considerable belt tightening for many investigators but is still preferable to the absence of any support. Obviously, investigators will not be able to meet all of their original research objectives with only partial funding. Our proposal would permit them to attain at least some of their research goals through the use of their own ingenuity and to continue as productive investigators. Obviously, study sections will have to scrutinize budget requests with great care to maintain standards. Finally, if an ongoing project cannot be continued, a more gradual phase-out system should be instituted that will allay some of the trauma.

Furthermore, this proposal would alleviate for competent scientists the unnecessary hardships and anxieties which the present procedure generates. The Veterans Administration and other scientific institutions already use a sliding scale system for funding research grants. This procedure permits a diversity of research rather than limiting it to few laboratories.

Several additional approaches also merit consideration:

2) The present system for allocating indirect costs should be reconsidered at once. A reduction in nonproductive business practices should reduce administrative costs which now devour an ever-increasing percentage of funds earmarked for research. The nonuniform allocation of expenses to indirect or direct costs and the exceedingly disparate indirect cost rates among institutions

create confusion and excessive and unnecessary accounting requirements and thus needlessly raise the costs of conducting research. Consideration should be given to returning to a fixed and reasonable indirect cost rate, such as that in force before 1966 (see K. T. Brown, *Science*, 24 April 1981, p. 411).

3) Large center grants and program projects, valuable for multidisciplinary programs, also support investigators already funded for other research; such funding might be reexamined to determine how much of this type of support we still can afford in a time of crisis. Allocation of shrinking funds to such large proposals and contracts occurs at the expense of individual independent research projects which most scientists feel are of greater value to our national research efforts.

4) A dollar limit could be placed on total support for an individual investigator's laboratory.

The sliding scale now appears to be particularly attractive, but all these ideas should be considered, and a combination of them may be worth trying. In any case, our objective is to initiate a review of current funding procedures and to support a larger fraction of highly meritorious research proposals.

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Health Effects of Radiation

On 4 January, at the AAAS annual meeting in Washington, D.C., a session was held on the health effects of radiation featuring a group of speakers who have published few papers on that subject in refereed scientific journals in the past several years. The principal paper by one of the speakers (*1*) has drawn more than 20 scientific critiques (*2*); its results also have been rejected by committees of the National Academy of Sci-