

SOS, Save Our Science

American Association for the Advancement of Science

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The current funding crisis, like the Chinese character for crisis, has two components, danger and opportunity. There is a danger that inaction or panic-inspired solutions can actually cause further trouble. And there is an opportunity to strengthen and invigorate the system if wise heads prevail. Many factors are involved, including past efforts to stabilize funding, sophistication in research, the clash between big and little science, overhead rates, and the nation's budget. But the overwhelming fact is that the increase in new investigators exceeds the increase in funding.

The plight of young investigators is critical and has been highlighted in recent articles in *Science* (see, for example, News & Comment, 20 July). The disheartenment and waste of talent that result when individuals trained for scientific careers are suddenly unable to pursue them send shock waves through the community and must be prevented, but funding new scientists by ruthlessly cutting support for more mature ones amounts to jumping from the frying pan into the fire. The funding attrition rate for older investigators is already dangerously high. Many are taking 10% cuts in existing grants to free funds so that young investigators will have a chance, and the grant renewal rate is already too low for individuals who, on the whole, have established a record of accomplishment. If there is a plan worse than not allowing young scientists to start their careers, it is telling 50-year-olds who are doing good work that the system no longer wants them. Part of the crunch also comes from the fact that many more institutions are qualifying as "research universities," where these young investigators are hired, and an infrastructure is needed to support them. The question then really becomes whether the country ought to support the increasing number of investigators and institutions.

The answer to that question should be a resounding "yes." We need to foster and encourage more scientists from groups that have been underrepresented in the past; increasing the number of research institutions is essential to this progress. Students at all universities need to be exposed to research on the frontiers of knowledge, not only to maintain their enthusiasm but also to develop their skill. Our burgeoning biotech, electronic, superconductivity, plastics, pharmaceutical, agricultural, and manufacturing industries need these new scientists, and they need the universities that are developing them. So this is exactly the wrong time to decrease the number of institutions that are training young scientists.

The next question is, where can this money be found? The standard answer used to be, "All it costs is one B-2 bomber." Today one hears, "All it costs is just one savings and loan milli-unit." A case can certainly be made, and will have to be made in the long run, that science deserves a priority in relation to many other programs. But in an immediate crisis it is probably best to show sacrifice by picking one's own budget, and in this case treating big science—the space station, the Superconducting Super Collider, and the Human Genome Project, for example—in parallel with little science might be a temporary solution. Compared with a dismaying message sent to a generation of young astronomers, physicists, chemists, and biologists, an across-the-board cut of 10% of big science funding would be an appropriate and evenhanded device, in that such a cut is already in effect for little science grantees of the National Science Foundation and the National Institutes of Health. These new funds would be earmarked for new grantees. It is to be noted that the increase requested for the space station alone is \$3 billion, about twice the amount of the entire NSF budget. This solution is a temporary stop gap that should be a prelude to a more careful analysis of all projects and policies within the infrastructure. An across-the-board cut in funding for big science that produced about a billion dollars would bolster young investigators and would delay but not cripple big projects.

In many areas, such as pollution, ecological planning, transportation, and new materials, additional and new research efforts are desperately needed. It is therefore essential that we do not turn off the spigot now, because we will almost certainly find that when we try to turn it on again, the resource has been depleted. Shifting funds between agencies is not easy because of the structure of the budget, but a determination by the White House and the Congress that an immediate crisis must be averted could produce a rescue.

—DANIEL E. KOSHLAND, JR.

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