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Instrumentation Funding

New measures are urgently required to bring under control the accelerating decline in the quality, quantity, and development of scientific research instruments in the United States. The main cause of the deterioration of equipment is lack of adequate funds for maintaining and updating it. Two major factors contribute to this lack. There has been a marked rise in replacement costs over the past decade due to inflation and to greater sophistication of the equipment. Simultaneously, there has been a decrease in the funds available for equipment, due to the effective 19 percent decline in federal expenditures for basic research combined with pressures to use the available research budgets to maintain existing operations despite the increased cost of personnel and supplies. Thus attention should be given to funding policies that will permit increased efficiency and cost effectiveness in the utilization of existing advanced instrumentation.

In the present tight money climate, the decline in the quality of scientific equipment can be reversed only by increasing the opportunities for sharing of technological resources. A significant shift in the distribution of funds available for instrumentation and a restructuring of funding policies are needed to achieve this goal. Existing avenues for the funding of costly instrumentation include both categorical grants and shared resources. Categorical grants, which are designed to further specific projects, neither mandate the sharing of instrumentation acquired under their terms nor provide for the cost of sharing—that is, the costs resulting from increased use. Instrumentation facilities funded as shared resources do not suffer from lack of use when the operational funds include an adequate provision for the cost of sharing. A properly managed shared resource best ensures both utilization of the instrumentation and maximum access to it.

Existing funding patterns are at variance with the need for wider sharing of resources. The Division of Research Resources of the National Institutes of Health (NIH) has had a constant level of funding since 1967. Since the rate of inflation in equipment costs in many cases exceeded 100 percent over this period, the net decrease in instrumentation funding far exceeds the estimated 19 percent decline in the support of basic research. The Division of Chemical Instrumentation of the National Science Foundation (NSF) recently announced an instrumentation program to establish regional laboratories. Although this is a commendatory beginning, no ongoing funding for full implementation has yet been secured. No specific provision exists within the NSF to fund major instrumentation for biological research.

We strongly endorse the NSF chemical instrumentation program and recommend that a parallel program be established for biological instrumentation. We further recommend that the NIH Division of Research Resources be revitalized, at least to its earlier levels of activity. A three- to fivefold increase in these budgets will be needed to prevent a continuing decline in the utilization of advanced technology and technological innovation in the United States. We would prefer to see a net increase in the appropriations earmarked to meet instrumentation needs. Barring such a possibility, it may be essential to change the distribution of the national R & D appropriation.

It is therefore recommended that the renewal and development of scientific equipment be specifically and primarily (although not exclusively) mandated to the divisions of federal granting agencies responsible for the establishment and maintenance of shared resources. At present these are the NIH Division of Research Resources and the NSF Division of Chemical Instrumentation; an NSF Division of Biological Instrumentation should be added. A substantial increase in their budgets should be mandated by Congress.—E. R. BLOUT, *Harvard Medical School, Boston, Massachusetts 02115;* D. M. GRANT, *University of Utah, Salt Lake City 84112;* O. JARDETSKY, *Stanford University, Stanford, California 94305;* W. D. PHILLIPS, *Washington University, St. Louis, Missouri 63130;* K. R. PORTER, *University of Colorado, Boulder 80302 (Ad Hoc Committee on Instrumentation Funding)*