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National Institutes of Health: The Centennial Year

The National Institutes of Health (NIH) today is such a highly differentiated mature organism that it is difficult to visualize its origin as a single cell: a small room in the attic of a building on Staten Island. The Hygienic Laboratory, created from a desire to provide relief for sick and disabled seamen, soon proved its worth after cases of cholera were diagnosed among immigrant passengers on the steamship *Alesia* in the 1880s; shortly thereafter, Joseph Goldberger conducted his landmark study on the prevention and cure of pellagra. Those early events established two of the hallmarks of basic research: surprise (pellagra was thought to be a contagious disease and turned out to be a nutritional problem) and delight (the revelation that very practical things result from basic research). The laboratory was later moved to a building in Washington built for the stupendous sum of $35,000, and eventually became the National Institutes of Health.

In the 1950s Director James Shannon formed an alliance with Congress that vastly increased support for this mission-oriented sponsor of basic research. That special relation between Congress and NIH has been maintained by subsequent directors, including NIH's present leader, James Wyngaarden. In fact, its relation with Congress is so good that each year we watch a soap opera in which the foul fiend (the Office of Management and Budget) threatens the beautiful damsel (NIH) with a fate worse than death (a budget cut) only to be foiled by her rescue by the heroic knight (Congress).

In this issue of *Science*, NIH directors Shannon and Wyngaarden and several staff reporters look at NIH in its centennial year. In discussion of the many facets of NIH, two major reasons for its success stand out. The first is the sophisticated democracy of its research granting procedures. Like democracy, peer review has plenty of critics, some knowledgeable and some not, who point out its flaws with gusto; like democracy, peer review has emerged triumphant because it is so much better than any of the alternatives. It is a process inevitably identified with the vagaries of human judgment, but nevertheless one that is based on expertise, hard work, and a fundamental integrity. Only loyalty to a higher ideal would drive a competent scientist who supposedly values his or her own time to participate three times a year in reading 106 grant proposals and attending a 3-day meeting for an honorarium of $300.

The second major reason for the success of NIH is that it has always had a broad vision of its mission. Many forget that NIH has always been a mission-oriented agency, beginning with tending to sick sailors and progressing to advocating the health needs of the general public. An early decision of NIH was to interpret Congress' call for cancer research to be best implemented by a general understanding of growth. If cancer research had been narrowly focused on the direct approach of chemotherapy, we would be far behind our current understanding not only of cancer but also of many other diseases. The study of the basic biology of viruses (because they were hypothesized to be a cause of cancer) led to the serendipitous cure for poliomyelitis. The success of the Salk and Sabin vaccines and the increased study of DNA then led through the genetic code back to oncogenes. The decision to emphasize basic research as the route to a practical goal has vastly improved our understanding of cancer as well as viruses, the genetic diseases, hormonal disorders, and mental illness.

NIH sponsors many programs but its leadership in research and its symbiotic relation with universities to expand the frontiers of knowledge in a sophisticated, fair-minded, and cost-effective way provide the soul to an operation in which all those who participate can be justly proud. Idealism is not enough. If altruistic concepts benevolently administered had produced repeated failures, NIH would have a tiny budget today. Its role in the cure and prevention of disease and its contribution to the expansion of basic scientific knowledge have made NIH one of the most successful enterprises of our government. Because the little laboratory in the attic on Staten Island had a combination of vision and altruism, the present organization cannot claim to have invented those values. What NIH has done, and why it deserves a place in history, is to preserve both creativity and integrity in a vast and expensive bureaucracy, an accomplishment which our daily headlines tell us is not easy to achieve.

—DANIEL E. KOSHLAND, JR.