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EDITORIALS

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Leprosy Research in the U.S.-Japan Cooperative Medical Science Program, 1965-1971

The U.S.-Japan Cooperative Medical Science Program is a unique experiment in international medical research. The program was established in 1965 by agreement between the President of the United States and the Prime Minister of Japan during the Prime Minister's visit to the United States. The purpose was to undertake "a greatly expanded program of cooperation on research in areas of human health that concerned all the people of Asia." The over-all directions of the program are set by a Joint Committee composed of eminent scientists from both countries; they are men with deep interest in the aims of the Program and appointed, respectively, by the U.S. State Department and the Japanese Ministry of Foreign Affairs. The chairmen are Dr. Colin MacLeod and Dr. Toshio Kurokawa. The health areas selected for study are cholera, leprosy, malnutrition, parasitic diseases, tuberculosis, and virus diseases. The subject of carcinogenic and mutagenic effects of environmental substances will be added this year. For each area there is a panel of five specialist scientists from each country. Each joint U.S.-Japan panel has agreed on the particular subjects to be covered. The funding of the panels and their activities is through the National Institutes of Health in the United States and

through the Ministries of Health and Welfare and Education in Japan; each country supports its own activities. The Program is one of research rather than field demonstration since each problem area exists because of inadequate basic knowledge and technics. Nevertheless there is a widespread sensitivity toward the disease problems as they present themselves in developing tropical areas, and a tendency to concentrate on studies whose solutions may promote control or treatment under actual field conditions. The Program is a successful one, as related in a recently released report which outlines its accomplishments in the first five years (Five Year Report, 1965-1970, The United States-Japan Cooperative Medical Science Program, U.S. Government Printing Office, Washington, D.C.).

The Joint Leprosy Panel agreed in 1965 to put its emphasis on cultivation, animal transmission, search for and development of anti-leprosy drugs, chemoprophylaxis, vaccination, and immunology. This rather broad coverage reflected the feeling that the entire field of leprosy research needed to be strengthened. Fellowships for leprosy study and travel were urged. An annual leprosy research conference was to be established in the United States (an annual

leprosy meeting was already being held in Japan). Arrangements were to be made for supply of clinical specimens to scientists in Japan and the United States. Joint U.S.-Japan leprosy research conferences each year have served to keep each side well informed on developments in the other country.

Research support is arranged differently in the two countries and it is easier for me to describe the way it has been done in the United States. Two mechanisms of research funding are followed: one through research grants, the other through research contracts. Research grant applications are in general the product of the scientist's own imagination and are requests for support for several years of research that the scientist feels will be productive. Contracts, in general, are used to support research when the end results can be more easily foreseen. Contracts can also be used for service functions; the purpose of one contract is to supply skin biopsy specimens for cultivation attempts, another is to supply thymectomized-irradiated mice to leprosy research scientists. Applications for both grants and contracts are carefully reviewed by peer groups.

The Program has had a profound effect on leprosy research in the United States. Overall leprosy research support from all sources is now two to threefold greater than it was in 1965. Very good scientists have been recruited into leprosy research, and the activities of those already in the field have increased. This expansion has been possible without loss in quality of research; in fact, one gains the impression that the quality too has increased significantly.

The Program has had a deep effect on leprosy research in Japan also, and the research output from the two countries has grown simultaneously. The new information provided by the Japanese at the joint conferences has been very helpful to the U.S. efforts. A review of the progress in leprosy research in Japan and the United States as a consequence of program support is not necessary because readers of this JOURNAL have had a chance to read the papers and abstracts of the research conferences which we have had published (Internat. J. Leprosy 35 (1967) 563-568; 37

(1969) 445-467; 38 (1970) 331-335, 336-337; 39 (1971) 76-102). In addition a medium has been established for rapid exchange of new scientific information for those actively working in the field. It usually takes several years from the time a scientist begins his work until he begins to make his best contributions, so one can expect the scientific yield to increase. The Program is so organized that exploitation of new developments and their application to field situations can be accomplished more rapidly now.

In all fairness, of course, one ought to consider how much of the recent progress is actually attributable to the Program. Certainly leprosy research was in a stage of development in 1965 where it was ready to accelerate, as has been demonstrated by its simultaneous advancement elsewhere in the world. Nevertheless, the advance has been faster and on a wider front than would otherwise have been possible, and this seems to be the result of several factors. One is the simple matter of financial support for the scientist's research. I know of several excellent scientists now working in leprosy research who would very probably have gravitated to other fields if the Program had not appeared on the scene. Another is the matter of critical size; a research field can develop more rapidly when it is big enough to allow its important problems to be considered by scientists with varied backgrounds and talents and thus to provide pertinent cross-stimulation. In this sense the annual leprosy research conferences and the joint Japan-U.S. research conferences have been extremely helpful. Still another factor is the possibility of integration of efforts on a scale not previously possible. An illustration is the chemotherapeutic approach of the U.S. Leprosy Panel, coordinated by a chemotherapy committee of U.S. and Philippine scientists. This broad effort includes searches for new drugs active against *Mycobacterium leprae* in mice, studies of the characteristics of their action in mice, their metabolism and disposition in animals and man, their preliminary, short-term trial in humans, and their definitive long-term trials in humans. It involves the contributions of scientists trained in microbiology, biochemistry,

pharmacology, and clinical medicine. Much of this effort is carried out by technicians that have been developed since the program started. Critical gaps can often be covered by well-focused contracts. The effort is too large to be handled by any single laboratory and was not possible in the days before the Program.

On first hearing of an international research program, some tend to first think of an actual pooling of funds and scientific effort. The differences between countries in research administrative policies are too large and at the same time too subtle for an approach as direct as that. Fortunately the approach used in this program has proved itself by being workable from the outset. A recent editorial in *Science* (173 [1971] 1085) emphasizes several factors that have

contributed to the success of the program. Among these are careful definitions of realistic objectives, equitable balance of scientific contribution by the two countries, and delegation of management of the program to a level of government where there are existing programs with closely related scientific substance.

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