

# BIOTECHNOLOGY IN THE THIRD WORLD

## THE UNITED NATIONS' ICGEB



After a protracted labor and considerable birth pangs, the International Centre for Genetic Engineering and Biotechnology (ICGEB) is about to make its long-awaited debut. The ICGEB was conceived in January 1981, the brain child of a panel of experts convened by the United Nations Industrial Development Organization (UNIDO) to consider ways in which biotechnology could be brought to bear on the pressing problems of the Third World.

The center's participating countries decided in early 1984 to establish two facilities for research and training, one in New Delhi, India, the other in Trieste, Italy. The ICGEB's Panel of Scientific Advisors (see *Bio/Technology* 3:289, April '85) met for the first time in February 1985 to review a series of plans prepared by UNIDO. Out of this meeting came recommendations concerning the adequacy of the projected budget and staffing of the ICGEB, the research agendas to be undertaken at the center's two facilities, and ways in which a true center of excellence in science and technology could be established as soon as possible. Based on these recommendations the current projections for the ICGEB specify a permanent staff of 31 scientists at each facility, backed by the necessary technical and administrative personnel. There are also provisions for a strong ongoing program for postdoctoral fellows and other trainees. The Panel of Scientific Advisors will serve as a search committee to identify candidates for these positions from around the world. These candidates do not necessarily have to be citizens of the ICGEB's member countries. In addition, a chief operating officer will be hired for each research facility.

### Research and Workshops

To a first approximation, the New

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Delhi facility will undertake research in agricultural biotechnology and tropical medicine; the Trieste laboratory will investigate topics within the very broad scope of industrial microbiology—including scale up and downstream processing.

In comparison with most industrial laboratories, and even many university programs, the ICGEB is definitely a small operation. It will thus have to confine its research to a relatively small number of specific topics. In keeping with the concept of the ICGEB as a center of excellence, some of the research at each facility will be devoted to advanced basic research, rather than to specific applications.

To further define the appropriate areas for research and training, the scientific advisors recommended that a series of advanced technical workshops be held. These workshops are to assess the current state of knowledge in several disciplines, as well as to consider the feasibility and projected time of achieving various practical goals. The workshops are also a means of recruiting a world class scientific staff.

The first workshop, devoted to plant biotechnology, will be held in New Delhi (September 17 to 22, 1985). The agenda includes topics on plant gene transfer, methods of cell culture, propagation, and differentiation, nitrogen fixation, and stress tolerance. The workshop, limited to 30 to 35 invited scientists, includes a number of the world's leading plant scientists. The participants will be charged with developing recommendations for appropriate areas in which the ICGEB should pursue research and seek staff.

The focus of the second ICGEB workshop was defined at a scientific advisors' meeting held in June at Rockefeller University. This workshop, devoted to the topic of biotechnology and industrial commodities, will be held in Trieste in October or November, 1985. Specific areas of interest will include enzyme technology, nutritional supplements, polysaccharides, and pharmaceuticals.

### The ICGEB as a Catalyst

The question continually arises as to how a center of such a small size can have a significant effect on the

promotion of biotechnology in developing countries. It should not be imagined that the ICGEB itself will produce more than a very few achievements leading to specific products or processes immediately applicable to Third World problems. Rather, through its role in promoting and coordinating a network of national centers—including many now operating in member countries—and its critically important function of training scientists in advanced methods, the ICGEB will serve as a catalyst for the development of technological capability in many countries. As this network expands to include institutions in advanced countries, as well, the barriers that create and maintain technological isolation should disappear.

The ICGEB cannot bear the sole responsibility for the development of advanced biotechnology in any single country. Each country must prepare itself to accommodate the skilled individuals trained by the ICGEB, and address the far-from-trivial matters of promoting new technology and industry, either through government programs or private investment. The countries must also upgrade their universities to provide enough trained people to support a new technology. The mid- to upper-level countries of the Third World, such as India, Pakistan, and South Korea, already have the basis for a scientific infrastructure and the development of industries. Africa, on the other hand, has little or no structure at all. If biotechnology is to be useful in these countries, there must be a comprehensive framework within which it can work. If it is out of context, it will fail. This framework—which includes resource management and economic, political, social, and educational reforms—must, above all, be appropriate to each country.

The ICGEB is only a beginning. It is, in fact, a bold experiment. In spite of the obstacles it still faces and the skepticism of its critics, everyone agrees that the goals are admirable. For that reason, it deserves the best chance it can get.

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