tional Science Foundation (NSF) made 108 Phase I awards in 1982 and 102 awards in 1983. Of those 108 project that won grants that first year, 35 have already won Phase II funding, with five more in process. According to Roland Tibbetts, SBIR program manager at NSF, 34 of these 35 Phase II proposals had already arranged for Phase III financing.

Private funding comes from three sectors: 40 percent from major industry, 30 percent from venture capital firms, and 30 percent from a mixture of partnerships, financial institutions, and state economic development programs. NSF is the fifth largest government agency participating in the SBIR program. Other agencies include The Departments of Com-

merce (which includes the National Bureau of Standards and the National Oceanic and Atmospheric Administration), Education, Energy, Interior, Agriculture, and Transportation, as well as the Environmental Protection Agency, the Nuclear Regulatory Committee, and the National Aeronautics and Space Administration.

—Jennifer Van Brunt

THIRD WORLD BIOTECH

NEW LIFE FOR UNIDO CENTER

VIENNA—The architects of the International Centre for Genetic Engineering and Biotechnology (ICGEB) face an interesting dilemma: how to establish the credibility of the ICGEB as a center of excellence before there is either faculty or facility. The center's newly created Panel of Scientific Advisors (PSA) addressed itself to this issue at its first formal meeting here in mid-February. The panel defined the criteria necessary to establish—and maintain—a center of excellence. Implementation, they said, should begin immediately.

The panel was unanimous in its recommendation for the first order of business: to recruit a first-class scientific staff. Jonas Salk, one of four Nobel laureates on the panel, suggested the appointment of five to ten "Distinguished Senior Scientists" as non-resident faculty. This would, he said, lend instant credibility to the center and would attract top-notch scientists to staff positions. Salk used a similar plan to establish the Salk Institute's reputation. The senior scientists, as a permanent part of the center, would help identify, interview, and select staff members. They would also participate in the center's workshops, seminars, and other related activities. Costs to the center would be minimal compared to the potential benefits. The advisory panel emphasized that workshops and seminars are an equally important means of recruiting personnel. The panelists strongly recommended that several scientific and technical workshops be set up immediately. The workshops would actually serve two purposes: Job candidates could meet and be evaluated by the search committee (Panel of Scientific Advisors) and the distinguished senior scientists. And workshops would also help to sharpen the focus of the ICGEB's own research programs.

There are to be two sites for the ICGEB, one in New Delhi and one in Trieste. As it now stands, research at the Indian facility will concentrate on agricultural biotechnology and ani-

The Panel of Scientific Advisors:

Joshua Lederberg, President, The Rockefeller University (New York)

Arthur Kornberg, Professor of Biochemistry, Stanford University Medical Center (Stanford, CA)

Jonas Salk, Founding Director, The Salk Institute (San Diego, CA)

Luis Leloir, Director, Institute of Biochemical Research, Campomar (Buenos Aires, Argentina)

Francisco Bolivar, Director, Genetic Engineering and Biotechnology Research Center, University of Mexico (Mexico City)

Luigi Cavalli-Sforza, Professor of Genetics, Stanford University Medical School (Stanford, CA)

Saran Narang, National Research Council (Ottawa)

Ray Wu, Department of Biochemistry, Cornell University (Ithaca, NY)

M. S. Swaminathan, Director General, International Rice Research Institute (Manila)

Robert Haselkorn, Chairman, Department of Biophysics and Theoretical Biology, University of Chicago (Chicago)

Pierre Chambon, Professor of Biochemistry, Université Louis Pasteur (Strasbourg, France)

Ananda Chakrabarty, Professor of Microbiology and Immunology, College of Medicine, University of Illinois (Chicago)

William Rutter, Chairman, Department of Biochemistry and Biophysics, University of California (San Francisco)

C. C. Tan, Director, Genetics Institute, Fudan University (Shanghai)

mal and human health care, while research in Italy will focus on industrial applications. The panel laid down three criteria for ICGEB research projects: they must remain highly relevant to the problems of the developing nations of the Third World; they shouldn't duplicate research conducted by other institutions; and they should be cost-effective and result-oriented.

To achieve, hold, and deserve a high reputation, the center must have enough scientists present to promote mutual, often synergistic, interaction. The panel says that this "critical mass" is higher than allowed for in

the original proposals for the ICGEB. The advisory panel recommends that the work force at each site be increased by at least 25 positions. The revised scientific and technical staffs would then be: seven senior scientists, 24 junior scientists, 30 postdoctoral fellows, and 45 technicians, at each facility. If the UNIDO (United Nations Industrial Development Organization) preparatory committee cuts these numbers to reduce expenditures, the ICGEB will not only suffer, but may not survive.

The ICGEB also needs a director. Although the UNIDO preparatory committee has not decided whether each of the two sites needs a director, the advisory panel unanimously recommended that there be only one director for the entire ICGEB. It is important, they said, that a single individual lead the ICGEB—to attract continued funding and to represent the center world-wide. The panel suggested that each site be headed by a principal executive officer to deal with the programs and operation of the facility.

So far, these are just recommendations. The UNIDO preparatory committee submitted them to the Scientific Advisory Panel for review. The Panel's recommendations will then go back to the preparatory committee, which has the final say. The preparatory committee is scheduled to convene this month in New Delhi.

UNIDO first proposed an International Centre for Genetic Engineering and Biotechnology in early 1981: since then international politics have created so many obstacles to creation of the center as originally conceived that the concept almost died. (For a detailed history, see *Bio/Technology* 2: 55-59, Jan. '84). In December 1984, the preparatory committee appointed Burke Zimmerman interim director of the project and named its international Panel of Scientific Advisors. Putting the project into the hands of scientists rather than politicians appears to have breathed new life into it.

—Jennifer Van Brunt