

## INTERNATIONAL COMPETITIVENESS

**U.K. LACKS BASIC SCIENCE SUPPORT FOR BIOTECH**

LONDON—Although Britain is at the forefront of many aspects of protein engineering, there is insufficient investment in supporting sciences such as molecular modeling, three-dimensional structure determination, 2-D nuclear magnetic resonance, and crystallography. That is one of the key conclusions of a new report by the government's Advisory Council on Science and Technology (ACOST). "Biotechnology has pulled a lot of science into the commercial arena, but at the expense of the basic science upon which it is founded," says the report. "We see this as a major market impediment for the exploitation of protein engineering expertise in the U.K." Highlighting this imbalance, ACOST recommends that research councils and government departments give equal priority to the supporting sciences required for industry to exploit fully developments such as catalytic antibodies and engineered enzymes for industrial use.

The ACOST report (*Developments in Biotechnology*) resulted from a study conducted by its Emerging Technologies Committee to review progress since the 1980 Spinks Report prioritised areas for development and pre-

cipitated changes designed to promote the commercialisation of biotechnology. The committee, chaired by Leonard Maunder of the University of Newcastle, lists several areas in which technology transfer is "proving successful." These include the transfer of Medical Research Council developments in recombinant DNA and hybridoma technologies to Celltech (Slough), the transfer of Agricultural and Food Research Council research in plant biotechnology to Agricultural Genetics (Cambridge), and collaboration between Leicester University and Imperial Chemical Industries (London) on genetic fingerprinting. But "the commercial benefits to accrue from biotechnology have not been as rapid as the Spinks Working Party envisaged, with few companies presently making a profit on these new developments.

"Although our industry is beginning to recognize the scale of opportunities presented by biotechnology, we are concerned that the U.K. is failing to exploit fully its strengths in the biosciences. Our potential for leadership in many areas is being eroded as leading U.S. and Japanese companies invest heavily worldwide,"

the report says. "Major U.K. developments...are increasingly being exploited by competitor multinational companies, aided by the recruitment of U.K. skilled personnel."

Plant biotechnology is another field in which the ACOST committee regrets that vigorous development over the past ten years has been accompanied by a "general decline" in traditional and supportive disciplines such as plant physiology and biochemistry. Although progress will be made "in the medium term" on the basis of existing results from this work, there is now a need for the research councils to establish a coordinated programme of molecular, biochemical, and physiological studies.

ACOST is also concerned about the future of stem cell biology, with its potential for introducing new genes into patients with defective genes, and for the construction of designer cells and the conquest of cancer. Highlighting research at the Paterson Institute in Manchester on stem cells of the hemopoietic system, the report calls for a "strategic decision by government and industry" to consolidate the U.K.'s lead in this field.

—Bernard Dixon

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**EC INDUSTRIAL POLICY EFFORTS INCH FORWARD**

LONDON—In November, a position paper on European competitiveness in biotechnology will go forward from DG III (Internal Market and Industrial Affairs) of the European Commission to the Council of Industry Ministers. While its content is not known, a presentation given in Dublin in June before an international political and economic forum on biotechnology made it plain that the document would "establish the principles on which the future [European] Community policies should be based." Delivered on behalf of Jean-Francois Marchipont, the head of DG III's Industrial Policy Unit, the speech indicated specific areas that would come under consideration:

- Coordinating research funding both from individual European Community (EC) member states and the Community;
- Adopting and harmonising implementation of EC legislation, in particular the present conflicts on intellectual property (*Bio/Technology* 8:628, July '90);
- Specific economic or fiscal measures that may be enacted to support commercial activities;

- Collaboration with GATT and the OECD to "ensure that global environmental objectives are integrated into economic decisions;"

- Coordinating legislative approaches between trading groups (U.S., Europe, Japan) through advancing the science base; and

- Public information on the merits, problems, and implications of biotechnology.

If the Council accepts the report's recommendations, they likely will be enacted as part of the move towards a single European market in 1992. As it stands, however, the document is "more a liability than an asset," according to Collette Cotter, the DG III official responsible for its collation. One weak point is the paucity of hard facts—e.g. a lack of statistics to support industrial disgruntlement with the way the regulatory framework for biotechnology, and public attitudes, are developing in Europe. "There is," she says, "no point in saying things are bad without proof."

The Senior Advisory Group in Biotechnology (SAGB), recognising both the importance of the DG III paper and the greater persuasiveness in po-

litical decision-making of data (as opposed to dogma), has compiled and published its own statistics in a document titled "Economic Benefits and European Competitiveness." Using intellectual property rights as one index, SAGB points out that far fewer biotechnology patents are granted to European inventors than to their U.S. or Japanese counterparts. The SAGB document claims that, while European concerns continue to support U.S. start-up efforts, no reciprocal investment exists. SAGB attributes this to the political hostility directed at biotechnology in Europe, the attractiveness of the U.S. investment culture, and risk capital incentives.

At face value, the SAGB statistics appear persuasive; no one, however, expects impartiality from an industrial forum representing Europe's largest companies with interests in biotechnology. It will be important, therefore, for other involved groups to contribute data on, for example, corporate R&D investment, biotechnology product markets, and the relocation of European companies abroad.

—John Hodgson