

United Kingdom

# Biotechnology report urges £10 million programme “to match competitors”

A MAJOR report on biotechnology in Britain — not yet published but made available to *Nature* — calls for a rapid increase in investment to build a competitive industry. It says the “customer-contractor” principle should be scrapped for biotechnology, where the border-lines between basic and applied research are grey. The report is a first draft — though unlikely to be substantially altered — from a seven-man working party set up early last year under Dr Alfred Spinks, a former research director of Imperial Chemical Industries. **Robert Walgate** reviews its hard-hitting and interventionist recommendations.

*THE working party was drawn from the Royal Society, the Advisory Board for the Research Councils and the Advisory Committee for Applied Research and Development. It was set up under the previous Labour administration; during its deliberations a Conservative government, committed to non-interference in industrial affairs, has taken office, but this has not restrained its far-reaching proposals.*

*It says the whole foundation of biotechnological research in Britain should be changed:*

“Since 1972, the UK has unlike other countries adopted a very rigorous customer-contractor principle for all its applied R&D funded by government. This approach is well-adapted to short-term or tactical applied work with clear objectives which can be defined by a single customer.

But biotechnology epitomises a field in which scientific knowledge and technical expertise are evolving rapidly, where definite customers have yet to develop in any number; where the research of government departments is divided; where the research will be of interest to a wide range of private industry, public services, etc.; and where the principle need for growth is in strategic applied research much of which will not yield results of immediate commercial benefit for perhaps a decade.

“For such a field the customer-contractor principle has serious shortcomings, and may exacerbate the situation by emphasising an arbitrary and unreal division between fundamental and applied research.” Nevertheless the ultimate objective should be to make British industry competitive with the best of its foreign rivals.

*Among its recommendations are:*

- That the research councils and the ABRC should set up a Joint Committee for Biotechnology to develop a coherent programme of biotechnology research and to coordinate spending of not less than £3million annually (including existing research council initiatives). The Joint Committee would aim to set up new projects in universities and elsewhere, and “should encourage collaboration between experimenters of different disciplines, in different departments and institutions”. Applied biologists currently working in medical or agricultural studies should be encouraged to take up biotechnology. A condition might be applied to applicants for grants that they should show evidence of industrial interest in their project.

- That an Interdepartmental Steering Group should be sent up to coordinate the actions of ministries and develop a programme of industrial R&D. The Department of Industry might take a lead in this, setting up cooperative programmes with industry (funded 50:50), research associations, government research establishments, universities, and inventors amounting to £2.5million annually (including existing projects).

- The Steering Group should consider setting up a Support Unit, like the Department of Energy’s Energy Technology Support Unit, to do desk studies and build up a list of potential projects for which applications would be sought.

- The Joint Committee and Steering Group should have overlapping membership to avoid a division between basic

and applied work, and in any case should review the position in 4-5 years’ time.

- There should be no new establishments specifically to pursue research in biotechnology; these can stagnate and exacerbate interdisciplinary divisions. But the Department of Industry should co-sponsor the Centre for Applied Microbiological Research at Porton Down (it is presently sponsored by the Public Health Laboratory Service); CAMR expertise could be well-applied to biotechnology.

- The University Grants Committee and the Committee of Vice-Chancellors and Principals should support the expansion of a limited number of centres of excellence in biotechnology from the best existing in universities. A minimum of 20 new teaching and research post should be established over the next five years with a capital investment of around £2million to provide additional laboratory facilities.

- Urgent provision must be made for training a work-force to match the expected growth of biotechnology; greater interaction should be encouraged between departments and undergraduate courses in the biological, chemical and engineering sciences.

- The Science Research Council’s Cooperative Awards In Science and Engineering, which funds research students in joint projects between university and industry, should be extended to the Agricultural and Medical Research Councils; and there should be analogous post-doctoral awards.

“Government should not impede the rapid development of biotechnology by inappropriate or unfounded concern for existing industries or the conjectural hazards apparently presented by some aspects of the new technology.”



Dr Spinks: he chaired the working party.

- The National Research Development Corporation, one of whose roles is to patent and license appropriate inventions made in universities, "should play a more entrepreneurial role in this area, where inventions are often not readily patentable. The NRDC should expand its staff in biotechnology and review existing financial incentive for academic inventors. The NRDC should be at least as concerned with the development of new business as with obtaining and licensing industrial property.

- The NRDC should continue to pursue with the Patents Office the patenting of microorganisms and press for arrangements, as in the US, which do not require the microorganism to be made available until the patent is granted.

- As new research defines the hazards of genetic manipulation, the UK in consultation with others from abroad should modify regulations appropriately. The Genetic Manipulation Advisory Group and the Health and Safety Executive should continue to reduce constraints while maintaining an adequate level of safety and introduce procedures to ease industrial application.

- The National Enterprise Board and the NRDC should investigate the use of public funds to set up a research oriented biotechnology company (akin to the American Biogen and Cetus). £2million a year for five years should be sufficient to establish if it could be profitable, the report suggests.

- The Ministry of Agriculture, Fisheries and Food and the Department of Industry should jointly investigate the use of agricultural products as feedstocks for

biotechnology.

- The Department of Health and Social Security should adjust its purchasing policy to encourage small biotechnological firms.

- The Department of the Environment together with the Department of Industry and the Natural Environment Research Council should consider the use of biotechnology for waste disposal and materials recovery.

- If the European Economic Community decides to pursue its research programme in biotechnology, the UK should seek maximum return from it.

- Government should seek fiscal regulation within the EEC which will allow the use of agricultural feedstocks for industrial biotechnology "and not impede the introduction of new processes based on biotechnology". The report here criticises "the strong lobbies of established industry and agriculture which tend to exert a disproportionate weight in resisting the cheaper and better products of new technology, particularly where these threaten to perturb existing patterns of agriculture". There should be assurances that processes "will not invite penal levies... We are concerned that this appears to be the present case."

- Addressing itself to the European Community, the report recommends that "all member states should consider the value of biotechnology in transforming agricultural surpluses, and should seek to amend the Common Agricultural Policy legislation that threatens this end". Further, the EEC directive on the control of genetic manipulation is outdated and should be "reconsidered".

- The report "supports" the SRC in a £1.5million capital, £1million annual expenditure on biotechnology; commends the ARC's initiatives in genetic manipulation, and makes a mild and indirect criticism of the MRC: "The MRC and research councils should review their roles in relation to industrial development based on biological processes so that their staff are aware of the desirability of creating, where possible, a national return for their efforts through industrial development."

Despite the case of cephalosporins (antibiotics emerging from MRC research which are now the NRDC's single greatest revenue earner) "the take-up of discoveries by UK industry is not encouraging". Extra facilities might be provided to researchers for applied work in their own laboratories, or a special development unit might be established. However, the MRC was not set up with industrial development as an objective, and any moves along these lines would require extra resources.

## National Collection of Yeast Cultures threatened

THE UK National Collection of Yeast Cultures, one of the most used in Europe, faces closure at the end of this year — unless the Agricultural Research Council can find a meagre £20,000 per annum to support it. "I don't see how biotechnology can carry on without a repository of cultures from which one can select strains" said a yeast microbiologist last week.

The collection has been looking for a home since early 1979, when one of its present co-sponsors, the Brewing Research Foundation, announced that it would withdraw its one-third contribution to the costs of the collection from January 1981. The major sponsor, the Ministry of Agriculture, Fisheries and Food, also decided to withdraw at the same date. The collection must also move from its present location at the BRF, in Nutfield, Surrey.

All would be well, say microbiologists, if there was some firm promise of new funds and a new place for the collection. But despite detailed recommendations to the Agricultural Research Council — who it is widely believed should support the collection — from the UK Federation for Culture Collections, no decision has been reached on either location or funding.

"Individual collections are not sufficient" said one microbiologist. "We keep our own small collections but we do not have time, competence or staff to do routine testing or distribute samples. It would be very serious if we sent the wrong organism".

The UKFCC has recommended that the collection and its four staff be established at the ARC Food Research Institute in Norwich, on a site where the John Innes Institute and the University of East Anglia are already established.

MAFF has placed the problem firmly with the Advisory Board for the Research Council's, which in turn has passed the problem to the ARC. But it would appear that the ARC is not prepared to fund the collection unless it receives extra finance.

Barbara Kirsop, the curator of the collection, told *Nature* that the collection has been in financial difficulty for four years. A number of agencies picked up the bill for short periods in the past, including the ARC which paid 50% of the bill for one year in 1976. "The BRF" said Kirsop "no longer wishes to support the collection because its emphasis has changed over the past ten years. People are using yeasts a lot more and we have constructed a very physiological collection which means we have a great number of yeasts with many interesting and useful properties". The collection holds 10-15 patented strains among a collection of 2000 varieties. "We need to start moving the collection in June, if we are to be out by December," says Kirsop. □