

Biochemistry in Japan

Applying fundamentals

Tokyo

INCREASED support for fundamental research in the life sciences is planned in a report to Prime Minister Yasuhiro Nakasone by Japan's top science policy-making body, the Council for Science and Technology.

Concern about the long lead of the United States in basic research in molecular biology and the effect this will have on the commercial exploitation of genetic engineering lies behind the report, and swift action is expected on its main recommendations — increasing the numbers and mobility of young researchers and strengthening the technical back-up for biotechnology. But university researchers are likely to be disappointed, for although the report is entirely concerned with “fundamental” research, the government sees this as “essential research fundamental to planned applications”. Expansion of truly fundamental research in the universities is unlikely.

To prepare the report, the council, which includes the heads of the science and finance-related ministries and agencies as well as industrial leaders, took special advice from both a life sciences group drawn from government, universities and industry and from a special committee comprising 22 of Japan's leading molecular biologists. Nakasone is expected to accept the report within a few weeks, when the ministries will be expected to work out how it might best be implemented. The financial implications should be included in ministry draft budgets by the end of the year.

Professor Hiuga Saito, head of the Tokyo University's Applied Microbiology Institute, who was the chairman of the council's special committee, stresses that the most important point made by the report is the need to give more young people a training in biotechnology, perhaps by means of special fellowships which would allow young scientists to carry out original research — a possibility already under consideration by the Ministry of Education, Culture and Science (MESC).

The report particularly emphasizes that all three of Japan's research groupings — the universities, government research laboratories and industry — must be encouraged to work together more closely. The idea of a special research institute, supported jointly by government and business, where young people could be trained, is floated. But the university side shows little enthusiasm for that project, and the chances are that it will proceed no further.

A more promising proposal is the removal of restrictions that hamper original research. Increased flexibility is, for example, to be encouraged in the research system so that research proposals not fitting into the conventional “project” funding can find support. Increased

freedom for young people to carry out individual research, and increased flexibility in the supply of equipment, perhaps by arranging for the rental of expensive equipment, are other possibilities.

University workers may gain from the recognition in the report that the pace at which biotechnology is advancing means that scientists can stay on top only if they can circulate around top laboratories — increased exchange of researchers is called for, both within Japan and between Japan and foreign countries, including more visits from foreign scientists.

The report also calls for the government to step up efforts to secure the basic resources of biotechnology. Calls are made for the creation of a larger collection of microorganisms, including those with special characteristics and from unique environments, as well as increasing stocks of cell lines, particularly those useful for the creation of hybridomas.

More rapid and thorough dissemination of data, particularly DNA and protein sequences but also data on the special characteristics of organisms and their life cycles, is seen to be important. A new computerized database to complement those existing elsewhere may result. Finally the report argues for the provision of more sophisticated tools for molecular biology — automatic DNA and protein synthesizers

Molecular sequences

UK community seeks access

BRITISH molecular biologists, frustrated by inadequate computing facilities, are attempting to persuade research councils and cancer charities to finance a new national computer link-up and software support scheme for protein and DNA sequencing. Their problems will be aired at a special meeting next month of the Inter-Research Council Coordinating Committee on Biotechnology with interested parties.

The stimulus for the meeting was a letter from prominent researchers addressed to the three research councils that support molecular biology and to the Imperial Cancer Research Fund and the Cancer Research Campaign. The signatories were Dr Michael Ashburner of the University of Cambridge, Professor William Shaw of the University of Leicester and Dr David Glover of Imperial College, London. Their concern arose from a feeling in the research community that scientists have to waste too much time in writing or modifying programmes that are system-dependent. It was also felt there was scope for an improvement in access to databases.

Research council officials are at pains to emphasize that no financial commitment is implied by next month's meeting.

and analysers, and microinjection and laser techniques.

If all these measures are put into effect, the result should be a major fillip for research in industry but not for the universities. What the universities lack at present is not money for molecular biology but permanent research staff. An increase in staff (or the new college or department of life sciences that Professor Saito would like to see) is, however, almost impossible under the present administrative system because the government has a long-term commitment to reduce the number of civil servants — and university researchers are civil servants, employed by MESC.

Industry can expect to benefit quickly from an increased flow of researchers and resources. Indeed, confidence that industry can do its own biotechnology research and apply that research with superb efficiency is expressed in a report from a private advisory body, the Japan Economic Research Centre, published after the government council's report. The report predicts that Japan will be the world leader in biotechnology by the end of the century: joint ventures and technical links with foreign companies will bridge the gap over the next three to five years and then Japan's proven ability to commercialize technology should enable it to begin to move into the lead. The only note of caution behind such predictions is the proviso that the universities will have to provide a good supply of trained personnel in search of jobs.

Alun Anderson

Enthusiasts in the research community, however, are already talking fondly of a network of “maybe 6 or 8” VAX machines at national centres, providing regular updates for databases and allowing the transfer of the latest software. These might in turn be connected to microcomputers for local analysis once the letter crunching had been done by the large machines. One estimate puts a price of “one or two million” pounds on the scheme.

The three research councils involved, the Medical Research Council, the Agricultural and Food Research Council (AFRC) and the Science and Engineering Research Council, all have their own budgetary problems. But, it is pointed out, all of these bodies give a high priority to the new biology, and the cancer charities are thought likely to look favourably on the idea. One of the difficulties is that the subject falls between the concerns of several research councils; however, the existence of the inter-research committee, whose chairman is Dr John Ingle of AFRC, has allowed a quick response. And, it is argued, the advantages of a computer link-up have already been demonstrated by the “Starlink” network used by astronomers.

Tim Beardsley