Interferon production

Japan now

International agreements for the manufacture of interferon appear to be catching on. Last week, the Wellcome Foundation Limited (whose sole shareholder is the British foundation known as the Wellcome Trust) announced an agreement with the Sumitomo Chemical Company of Japan that will in due course enable the Japanese company to use Wellcome technology for manufacturing lymphoblastoid interferon.

The project, which is thought to be potentially worth several million pounds to the British company, will first of all involve clinical trials in Japan based on interferon supplied by Wellcome. Thereafter, the Japanese company will decide whether or not to go ahead with the building of a plant for producing interferon commercially, using the techniques developed at the Wellcome Foundation over the past few years.

Broadly speaking, the technique is to infect a culture of lymphoblastoid cells with Sendai virus, which stimulates interferon production, and to extract lymphoblastoid interferon on chromatography columns loaded with antibodies against the type of interferon being produced.

So far there has been no opportunity to decide whether the recently announced technique for raising monoclonal antibodies against interferon (Secher, D. S. and Burke, D. C., *Nature*, **285**, 446; 1980) will make this process efficient.

The cost of interferon plants of this kind is likely to be of the order of £5 million. It is thought that the production of interferon by the Wellcome Foundation now exceeds the total production of Finland, hitherto the chief source of interferon. For those drug houses manufacturing interferon from tissue cultures, the overriding question for the future must be whether cloning techniques will lead to more efficient and cheaper manufacture.

If it is possible to obtain as many as a hundred molecules of interferon from a bacterium such as *Escherichia coli* carrying an interferon gene, the capital costs of the manufacturing plants required to produce a given amount of interferon will be reduced at least in proportion to the ratio of the generation times of bacteria and cells in culture — 20 minutes to three days, or a factor of a hundred. Drug houses using tissue culture techniques (which are thought to include Roche and Merck as well as Wellcome) appear however to be counting on the length of the period of clinical investigation of cloned interferon that would be needed before these could be put on the market.

As things are, there is no direct evidence that cloned interferon is equivalent to that from tissue culture and in any case the multiplicity of interferon molecules now being identified will need to be distinguished from each other physiologically and clinically, a process thought by the existing manufacturers to require five years or so.

Although the agreement with the Sumitomo Chemical Company has been formally signed, there are some grounds for anxiety that the arrangement may be frustrated by difficulties in Japan about the widespread use of whatever materials the Wellcome Foundation's Japanese partner eventually seeks to put on the market.

Occupational safety

Cuts ahead

Britain's Health and Safety Executive (HSE) is expecting difficulty in cutting its coat according to its cloth. In its latest annual report, published earlier this week, the HSE says that the government's plan to set its 1981-83 grant at 6% below the grant for 1979-80 will mean a reduction in the amount of work it can carry out.

Most of the savings will be made on staff, probably by reducing numbers from 4200 to 3800, and on internal office costs. But, says the report, some of its work of direct relevance to employers and workers, in particular that of the Factory Inspectorate, is bound to suffer. The research budget is also expected to come off particularly badly, with cuts of 18 per cent or about £2.2 million expected for the main research and development budget.

The main fear of John Locke, Director of the HSE, is that its work will become more reactive, dealing only with problems retrospectively. Such a move would be contrary to the policy of anticipating problems adopted by the executive since its creation in 1974.

Locke regards the anticipation of problems through extensive visits to workplaces and an active research programme a priority, even above some of the daily demands on the executive's time. In the report, he says that longer term work on problems with no immediate obvious effects on employers and workers, especially those of occupational exposure to chemicals, noise and radiation, must continue even if cuts have to be made elsewhere. Such a policy would be in line with the changing emphasis of the executive's work over recent years from accidents at work to longer term health problems.

The plan is to make most of the cuts in the research budget fall in those areas, commonly involving standard testing, where industry could be persuaded to step in with funds. Hence, the HSE hopes that industry will make up for the £1.6 million reduction in the research division's direct support to the inspectorates by arranging for its own tests to be done. Industry is also to be encouraged to pay for and conduct some of the work done under three of the executive's major current research projects; a study on the toxic effects of low levels of isocyanates, a study on mortality in the rubber industry and a project at Porton Down to study the dispersal of heavy gas clouds. To avoid industry totally controlling studies on its own problems, the HSE still intends to be responsible for designing and monitoring research projects. Industry, however, will be encouraged to provide its own data for them or to pay for research that is done independently.

One of the executive's problems in defining a coherent programme of future work is that with the increasing public awareness of health and safety issues, largely fostered by its previous work, increasing demands are constantly being made on its resources and new problems are brought to its attention. One of the major areas in which it will be stepping up its work is nuclear safety to cope with the government's plans to increase the nuclear power programme and to build a pressurized water reactor. Additional resources are to be put into the Nuclear Installations Inspectorate and almost all the work on fast reactor safety is to cease so that resources can be transferred to studies of PWR design. Work will also increase on toxic chemicals and major hazards, both of which are part of EEC programmes of research.

In a plea for kinder cuts by the government, the report argues that a major reduction in its services could lead to increased expenditure elsewhere, especially in the health services and sickness pay. It says that if further cuts, beyond 6% are planned then the Health and Safety Commission, the body to which the executive is responsible, would look to the government for suggestions as to which areas of its work it should reduce.

The executive does have some statistics to support its case. The number of fatal accidents for those industries covered by the executive throughout its five year life, fell from 651 in 1974 to 544 in 1979. Non-fatal accidents have also dropped by about 25% over the period.

Judy Redfearn

Graduate students

Places sought

Demand from new British graduates for research grants is surprisingly buoyant this year. Half-way through the short season during which the research councils make awards, the Science Research Council at least is modestly encouraged by the volume of applications, which is well up on that of last year.

Part of the explanation is the relaxation of the rules for the awards in the gift of the SRC Engineering Board. For the second year, awards of engineering studentships both for research and for advanced study (usually leading to an MSc degree) are being made on the principle of "first come,

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