

shared by the members of a Royal Society working party, chaired by Professor W.D.P. Stewart, which will shortly publish a report on biotechnology and education.

The working party estimates that over the next ten years Britain will need 1,000 extra graduates and 4,000 technicians trained in biotechnology. It does not, however, favour new undergraduate courses specifically in biotechnology; training should instead be based on existing undergraduate courses in biology and chemical engineering followed by more specialized postgraduate courses.

The working party also supports a recommendation originally made in the Spinks report that the University Grants Committee should create 20 new lectureships in selected universities. That request, together with many of the Spinks recommendations, received short shrift from the government, which said in a White Paper earlier this year that the development of biotechnology in Britain should depend on market forces rather than government intervention.

Judy Redfearn

Hungarian protests

The use of psychiatric methods to treat political dissent has reappeared in Hungary for the first time in more than a decade, with the confinement in a Budapest mental hospital of Dr Tibor Pakh, a 57-year-old lawyer and activist from 1956. Dr Pakh's hospitalization evoked a sharp letter of protest from more than 50 Hungarian intellectuals and scholars.

Since the rise of Solidarity, Dr Path has issued a number of open letters supporting the Polish liberalization and censuring the Hungarian authorities for echoing Moscow's condemnations of it.

On 4 October 1981, Dr Pakh attempted to travel to Poland. He was stopped at the Hungarian frontier, his passport and personal papers were confiscated, and he was forced to return to Budapest. On 6 October, when his protest to the Procurator General's office failed to obtain satisfaction, he began a protest fast in the University Church in Budapest. Three days later, he was forcibly conveyed to hospital, and given intravenous feeding and heavy doses of psychotropic drugs including haloperidol, one of the drugs used in similar cases in the Soviet Union.

The group of intellectuals who signed the protest letter maintained a constant stream of visitors to the hospital, demanding to see Dr Pakh and also forwarded their protest to Solidarity, who published it in their uncensored bulletin *Niezalezosc*. The protesters apparently made their point, and on 26 October, Dr Pakh was released, ostensibly on "readjustment leave".

Vera Rich

Interferon

Gamma winners

Molecular biologists at the Californian biotechnology company of Genentech have won the race to clone a sequence of DNA corresponding to γ interferon, the least understood member of the family of proteins which may yet find a place in the therapy of cancer and viral diseases. At the same time Molloy Laboratories, a subsidiary of Revlon, have been contracted by the US National Cancer Institute (NCI) to purify sufficient γ interferon from natural sources for initial clinical trials.

The Genentech results, briefly presented by Dr David Goeddel at the Second Annual International Congress for Interferon Research in San Francisco, not only establish the sequence of γ interferon but also show that bacteria, yeast or mammalian cells are able to produce γ interferon when supplied with the corresponding sequence of DNA.

The starting material for both Genentech and Molloy was human lymphocytes, prime producers of γ interferon. From them Genentech isolated a mixture of messenger RNA molecules, produced the complementary DNA molecules, and transplanted them into cells of the bacterium *Escherichia coli*. Bacteria were then isolated which were producing the antiviral activity of interferon but with the instability towards acid that distinguishes γ interferon from the α and β varieties. Finally the DNA responsible for that activity was sequenced and shown to be about the same length as that of α interferons but with an unrelated sequence.

Human lymphocytes are also the starting material for the γ interferon that Molloy, in return for \$270,000 from the NCI, are to produce by traditional methods of purification from normal white blood cells obtained as a by-product of blood transfusion. Their aim is to produce five billion units of γ interferon, enough for up to 1,000 human doses, by the end of September 1982.

It is a matter of speculation whether the Genentech and Molloy materials will be equivalent. A lot depends on whether there is a single γ interferon or whether, like α interferon, it is a family of related molecules. Genentech has no evidence of more than one species but if they do exist they are likely soon to be discovered either by the Genentech scientists or by those whom they beat to the first sequence, including Dr Charles Weissmann on behalf of Biogen, Dr Jan Vilcek of New York University Medical Center and Dr Leroy Hood of the Californian Institute of Technology.

The hope of all concerned is that γ interferon will be of greater value than its stablemates in the therapy of cancer. The hope stems from the fact that antitumour effects of interferon are thought to work through the immune system and that γ interferon is

produced by and has effects on cells of that system. Reasonably large clinical trials of α and β interferon against cancer and viral diseases are currently under way using material purified from cells. It will be some time before their value is clear and even longer before it is known if γ interferon is more effective.

Peter Newmark

Royal Botanical Gardens

Look to the margins

This week sees a new man in charge of the Royal Botanical Gardens at Kew in London — Professor Arthur Bell, a biochemist, formerly head of the department of plant sciences at King's College. And it could mean a very different approach for an institution with a 140-year history of traditional botany behind it.

The Royal Botanical Gardens today include Kew together with a 600-acre estate at Wakehurst Place in Sussex, and are run as a department of the Ministry of Agriculture, Fisheries and Food with a scientific staff of almost 500. The emphasis is still very much on the traditional pursuits



Bell in situ at Kew

of collecting wild plant species (Kew boasts the world's largest herbarium) and taxonomy. Kew's new director, however, brings with him an enthusiasm for plant breeding not seen there before. And Professor Bell has a clear goal in view — to change the pattern of agriculture in the Third World.

At present just thirty plant species provide eighty per cent of the world's food supply. Many of these basic food crops are now grown in arid conditions far removed from those in which their free-growing ancestors used to thrive. Professor Bell's contention is that there are many indigenous crops used only as animal fodder, or unpalatable because of the presence of toxins, which would give better yields than today's food crops if suitable variants were selected. Therefore much of Kew's effort will centre on isolating variants of these so-called "marginal" crops which do not produce toxins, but which still grow well in arid climates. In this way perhaps Kew will again become the important source of new crops that it once was.

Charles Wenz