

Stanford sells gene-splicing licences

Boyer, Cohen patent may yet be challenged

Washington

In a move expected to bring in annual royalty payments of over a million dollars within the next four or five years, Stanford University announced this week the terms under which it is prepared to let commercial companies use the gene-splicing techniques developed in the early 1970s by Dr Stanley Cohen of the university's medical school and Dr Herbert Boyer of the University of California in San Francisco.

The techniques have since become the basic tools for many widely used genetic engineering processes. University researchers who wish to use them may continue to do so free of charge, but companies marketing products based on their use will be required to pay a royalty fee varying from one per cent of net product sales below \$5 million to 0.5 per cent on annual sales of over \$10 million.

Before reaching the commercial stage, any company wishing to use the techniques in its research can purchase a non-exclusive licence from Stanford for an initial fee of \$10,000, and an annual sum of the same amount. An incentive offered to those who act quickly is that any company which signs up before the end of 1982 can credit five times the licence fee against future royalties, up to a maximum of 50 per cent of the royalties earned in any one year.

Stanford will deduct 15 per cent from fees and royalties earned to servicing the licensing arrangements. After that the remaining sum will be divided equally between Stanford and the University of California. Stanford's share will be further divided, with a third going to the university's medical school and a third to its departments of medicine and genetics. Dr Cohen, who holds joint appointments in the two departments and who would under the university's normal rules be entitled to the remaining third, has assigned his share back to the university, to be divided between biomedical research and support for postdoctoral fellowships. Dr Boyer has also waived any rights to personal royalties.

Despite being one of the leading research universities in the United States, with an annual research budget of over \$100 million, Stanford has so far lacked any major money-spinning patents comparable, for example, with the widely-used dental fluoride developed at the University of Indiana. University officials are hoping that the income from the patent on the Cohen/Boyer techniques, filed in

1974 and granted last December, will change this, although president Donald Kennedy says he does not anticipate that royalty income from this source "will significantly alter our present financial projections".

The patent granted by the Patent Office is broad, covering the series of steps used by Drs Cohen and Boyer to replicate and express exogenous genes in microorganisms. It describes the techniques used to cleave a plasmid or virus DNA, to insert a new gene to provide a biologically functional replicon, to place the latter in a microorganism cell, and finally to isolate the transformants in order to produce cells in which the DNA molecules in the modified plasmid can be replicated and expressed.

The breadth of the patent — and the ubiquity of the techniques' current usage — means the university is expecting a large number of licensing requests. In a statement issued on Monday it estimated that more than 200 companies in the United States may already be involved, and that half may sign up for the licences in the near future.

Chevènement wins control of science

France's civil science is now almost totally in the hands of one man, Jean-Pierre Chevènement, the left-wing minister of state for research and technology (see *Nature* 2 July, p.3).

Chevènement has been battling for weeks with other ministers — notably two successive ministers of industry — for the power he believes he needs to direct France's scientific future. Now he has won.

A decree published last week gives him control of the budget for all government-funded civil research, development and technology. The budgets of all public bodies concerned with such matters will henceforth be ascribed to his ministry, giving him around FF20,000 million (£2,000 million) to play with each year.

Nevertheless, the formula which gives Chevènement these powers is complicated, and is likely to be read very closely by all concerned.

Chevènement will, however, have total authority over the Centre National de la Recherche Scientifique (CNRS), which plays the leading role in supporting basic science in France. CNRS has 1,200 laboratories (including a third of all university laboratories) most of them managed jointly with the universities or other institutions but 250 of them completely independent. CNRS is a dominating influence in basic research in France, with the possible exception of mathematics; it has a staff of 25,000, of whom 8,000 are researchers.

Previously CNRS was under the authority of the ministry of universities,

At the same time, this breadth could lay the patent open to challenge from other scientists who claim to have made significant contributions to the results which were patented by the universities solely in the names of Cohen and Boyer. Murmurs of possible legal challenges have surfaced in the past, although the relatively low licence fee — as well as the fact that the royalties will go to the universities and not to the individual scientists — may well dampen any conflict.

Stanford is requiring that any company obtaining a licence must agree to use the techniques in compliance with the guidelines for physical and biological containment of experiments drawn up by the National Institutes of Health.

The university has also welcomed a recent ruling by the International Trade Commission forbidding the unlicensed import of goods made abroad with techniques patented in the United States. Previously it had been feared that companies might try to avoid the licensing fee and royalty payments by setting up production facilities in other countries.

David Dickson

and some now think that the separation from that ministry may complicate the management of joint laboratories: Chevènement is primarily interested in science as the driving force of industrial development, which may not match the views of some university departments. But he has also described science as an essential element of "culture" (music to the ears of President François Mitterrand) and wishes further to improve the international standing of French science.

Other bodies over which Chevènement will have total authority are the Délégation Générale à la Recherche Scientifique et Technique, which will act as his secretariat; the Agence Nationale pour la Valorisation de la Recherche (aimed at turning government-sponsored research into industrial innovations, through venture-capital grants); and two ministerial services, the Mission Interministérielle pour le Développement de l'Information Scientifique et Technique, and the Délégation à l'Innovation et à la Technologie.

Over other organizations, such as the Commissariat à l'Energie Atomique and the Centre National d'Etudes Spatiales, Chevènement will have control through the indirect (but powerful) lever of the budget; and also, if the relevant paragraph in the decree is so interpreted, through appointments.

This paragraph gives Chevènement the task of undertaking "all reform" of public bodies concerned with research, including "all measures have an impact on the

politics of scientific employment" — which he must countersign.

Chevènement will also "be associated with" France's efforts in international scientific cooperation, in cooperation with the foreign minister M. Claude Cheysson.

The decree outlining Chevènement's powers has required negotiation at the highest possible level, and has been signed by President Mitterrand, Prime Minister Pierre Mauroy, the foreign minister and ministers of industry and education.

The national colloquium on science and technology will now take place on 13–16 January 1982, and Chevènement is laying great emphasis on its role in defining a new politics of science in France, and the major "loi-programme" for science which he is to put before parliament next year. The colloquium is to have six principal sessions: on the cultural contribution of science and scientific responsibility; on the internal division of money for science (scientific and technical options, big science and so on); the role of science in helping France to climb out of the recession and create employment; the management of scientists (contracts of employment and so on); the role of other bodies influencing science (big industry, for example); and the political and structural means adopted by Chevènement himself. **Robert Walgate**

No rapprochement

The usually covertly political nature of education in France came out into the open last week with the sacking of 14 of the 28 regional education officials.

These officials administer education from primary to university level within the "Académies", territories which encompass several of the French departments; ever since General de Gaulle revised their powers in 1967, they have become increasingly political figures. Madame Saunier Seité, Giscard d'Estaing's minister of universities, was previously head of an *Académie*; and others became junior ministers or ministerial advisers.

In effect, this was inevitable under de Gaulle's ordinance, which loosened their hold on power and so made them more reliant on the goodwill of the government. Now fourteen unlucky incumbents have been found to be tarred too heavily with the brush of the previous administration, and must go.

This will make room for a "profound reform", the minister of education, M. Alain Savary, said last week in a press statement. The new administrators must not make politics, he said; they must obey the politics of the government. Their predecessors, by contrast, had been active against the new government both before and after the election. Some had stood as candidates for opposition parties. The deposed director of the Paris *Académie*, for example, had been Saunier Seité's chief adviser. **Robert Walgate**

Alternative energy conference Realism the theme

Washington

At least five heads of state, including Canadian Prime Minister Pierre Trudeau and Mrs Indira Gandhi of India, will be among the participants at the United Nations Conference on New and Renewable Sources of Energy (UNERG) which starts in Nairobi next Monday. Their presence, together with energy and other ministers of industrialized and developing nations, is held by the conference organizers to indicate a measure of success in getting across their view of the political importance of alternatives to oil, coal, gas and nuclear energy.

But political weight alone will not guarantee a successful conference. UNERG is likely to set a very different tone from the large UN conferences of the 1970s, when global issues such as environmental pollution and the "human habitat" were confronted in a spirit of optimistic idealism.

From the beginning, UNERG has been organized with a more pragmatic outlook. It was, for example, agreed by a narrow vote of the UN General Assembly that nuclear power would not be included on the "new energy technologies" agenda, a move supported by many industrialized nations which feared the result would be too difficult to handle, but opposed by developing nations on the grounds that its exclusion — together with any explicit reference to conventional energy sources — would inevitably skew any results. But perhaps the main stimulus for pragmatism is the general feeling that grandiose schemes for new international bodies (such as the UN Environmental Programme, set up after the Stockholm conference in 1972), or even for a commitment to significant increases in development aid funds, are unlikely to gain support in an international mood of austerity.

In such a context, the tangible achievements of the Nairobi meeting will inevitably be limited. But Secretary General Enrique Iglesias, seconded to direct conference preparations from his permanent position as head of the Economic Commission for Latin America, remains confident that it can still have a real impact by bestowing legitimacy on energy sources frequently omitted from development planning.

One of the most practical parts of the conference has already been completed — a series of technical reports on fourteen different types of new and renewable energy sources, from wind energy to draught animals. The quality of the reports is mixed; but some, such as that produced by an international panel on wind energy, have met with wide approval. And the preparation of national contributions for the conference is said to have catalysed thinking about alternative forms of energy

production and energy planning in general — particularly in some of the developing countries — that had previously been virtually non-existent.

How these will evolve into practical initiatives remains to be seen. Several industrialized countries are said to be keen to support the setting up of research and training institutes for the various energy sources, wood-fuel being the most frequently quoted example. And the Society for International Development is promoting the idea of an international network of energy research institutes along the lines of the agricultural research network run by the World Bank.

The political debate will inevitably focus on the two factors which tend to dominate all international meetings of this nature: money (development aid contributions, primarily from the industrialized nations), and power (the organization of the UN bureaucracy).

Initially the developed and developing nations will be less far apart than at the UN Conference on Science and Technology for Development (UNCSTD) in Vienna in August 1979, where the Group of 77 arrived at the bargaining table with a proposal for a new fund to support Third World research with a budget of \$2,000 to \$4,000 million. This time the developing countries have accepted that such proposals are unrealistic. Any extra support for development of new energy technologies is therefore likely to come from changes in existing arrangements.

The conference organizers originally hoped that the meeting would coincide with the creation of a new "energy affiliate" by the World Bank, a proposal put forward by the bank's then President Robert McNamara last year as a device for raising capital for energy production schemes. So far, though, this has been vetoed by the Reagan Administration on the grounds that investment should, where possible, be left to the private sector.

With the World Bank's initiative stalled — and general agreement that the Nairobi conference should not try to set up a new energy fund — one of the most likely outcomes is an agreement that energy projects should receive a set proportion of the funds raised through a new "financing system" for science and technology, which has been in the planning stages since the Vienna meeting two years ago.

If approved in principle by the General Assembly later this year, the "financing system" would probably take over responsibility for projects at present financed through a two-year interim fund, also established at Vienna, operated by the UN Development Programme. The interim fund already supports several energy projects, such as research into the use of wind power in Mauritius and the introduction of more efficient wood-stoves into the Sahel region of Africa.

To a large extent, however, the most significant meetings will not take place in