Biotechnology

Australian programme revamped

Canberra

THE National Biotechnology Scheme has re-emerged under the new Australian government as the National Biotechnology Program after a couple of months incubation. But whether the difference goes much beyond nomenclature will become clear only when the allocation of funds is announced in August. The Minister for Science and Technology, Mr Barry Jones, hopes the programme will "bridge the gap between laboratory research and implementation of discoveries".

As proposed by the previous government, the National Biotechnology Scheme would administer A\$2.5 million for basic research as well as applied research in projects showing potential for industrial development. Another A\$2.5 million from the Australian Industrial Research and Development Incentives Scheme would be made available to industry specifically for biotechnology. The principal change is that the new programme will abolish the dual support system and integrate all biotechnology support. Hence university projects with a biotechnological bent, as well as the specific commercial opportunities identified by the Department of Science and Technology (DST) at a workshop in November last year, are eligible for support. In spite of the indecision about the total amount to be allocated, DST will shortly be advertising the programme and calling for applications. It may wish to gauge the demand and adjust supply accordingly.

The government proposals are heavily biased towards applied projects, at the risk of neglecting research in molecular biology on which new advances are likely to be based. A DST spokesman said that a minimum condition for award is evidence of industry interest, but industrial involvement would be preferable. Professor Bill Elliott of the Center for Gene Technology, University of Adelaide, is concerned "whether there is sufficient appreciation of the importance of basic research in molecular biology" and considers that a parallel increase of support for basic research may be essential.

In another move aimed at stimulating the country's biotechnology, the government has decided to introduce legislation allowing Australia to accede to the Budapest Treaty, a patent agreement under the UN World Intellectual Property Organization. According to Mr Jones, "Australia's accession to the treaty will enable industry to have access to microorganisms deposited in any international depository established under the treaty". The need for such access arises because of the technical difficulties of sufficiently describing microorganisms in patent applications. Consequently the present patent law will be changed to enable deposition in an authorized collection to

take the place of a full description for patenting. The legislation will lead to the establishment of an international depository in Australia that might also serve as a national collection for the Australian biotechnology industry.

Vimala Sarma

Cancer causation in booklet form

A NEW booklet published by the epidemiology unit of the British Imperial Cancer Research Fund (ICRF) summarizes the factors which influence the development of cancer. The booklet is based on the book "Causes of Cancer" by Sir Richard Doll (head of the epidemiology unit) and Richard Peto (also from ICRF) which was published in 1981. It takes the criteria drawn up by the World Health Organization in a 1964 report as its definition of extrinsic factors. These cover "man-made or natural carcinogens, viral infections, nutritional deficiencies or excesses, reproductive activities and a variety of other factors

determined wholly or partly by personal behaviour". For each of the environmental factors the booklet assigns a percentage value for the number of cancer deaths in the United States which can be attributed either directly or indirectly to that particular extrinsic factor as compared with the total number of deaths through cancer in any year. The range of confidence with which these figures can be given varies from "highly accurate" in the case of tobacco to "within a factor of two" in the case of occupation and "uncertain but not to be excluded" for food additives. The figures can be misleading, however, as with the effect of alcohol. It appears from the diagram that alcohol accounts for 3 per cent of cancer, whereas alcohol itself does not cause cancer, but instead it enhances the carcinogenic effects of other environmental factors. However, Sir Richard Doll sees the circumstantial evidence for the relative contribution of extrinsic factors to cancer deaths as "sufficient to obtain a conviction in a court of law".

Melanie Kee

Genital herpes

Vaccines show the way

HOPES that a vaccine might one day provide a cure for genital herpes have again been raised by the news that clinical trials of a new vaccine are already under way in the United States, and that a British group is hoping to start trials on another vaccine shortly.

The British group, led by Dr Gordon Skinner of Birmingham University, has developed an acetone-derived subunit vaccine. Although derived from the herpes simplex type 1 virus, which causes oral infections (cold sores), the vaccine is active against the type 2 virus which is responsible for the genital lesions. Tests in volunteers have been encouraging — vaccination protected 97 per cent of partners of known herpes sufferers from attack, and 75 per cent of patients who had themselves suffered one attack were protected from recurrence by three injections of the vaccine. This latter finding is important since it suggests that even though previous infection with herpes does not impart immunity from future infection, a vaccine might give such protection.

As the Birmingham group is quick to point out, however, such limited "volunteer" trials can sometimes be misleading. There is very often a considerable placebo effect and too much dependence on subjective judgements made by the patients themselves. But, encouraged by the early results, the Birmingham workers have started discussions with the UK Committee on the Safety of Medicines with a view to obtaining approval for a properly controlled double-blind clinical trial; similar talks are under way with the US Food and Drug Administration for permission to conduct a trial on 100 patients at Rush-Presbyterian-St Luke's Medical Center in Chicago. Production of the vaccine in the quantities needed for such trials would be undertaken at the Centre for Applied Microbiology at Porton Down in Wiltshire.

In a clinical trial being carried out on 500 individuals in the Seattle area, the US drug company Merck is also testing a DNA-free vaccine. The bulk of the subjects in this trial are the healthy partners of patients who suffer from herpes, and it is clearly in these cases that the vaccine is thought to have greatest potential. Dr Laurence Corry, who is in charge of the Merck trials, feels that the vaccine being tested is unlikely to become available for general clinical use, but that if the results of the trials are promising, a new vaccine will be developed.

The possibility of routine vaccination against herpes, however, is likely to be at least 5 years off even if the present trials are successful. The Seattle trials are due to last about 2½ years and it will be at least 3 years

before the British trials are completed. Then it would take perhaps another 2 years for production methods to be perfected and for the necessary product licences to be issued.

As well as the "conventional" approach, the "biotechnological" route to a herpes vaccine is being tried by at least one company. Molecular Genetics Inc. of Minnesota, working with the drug company Lederle, has got as far as producing an immunologically-active chimaeric protein containing a glycoprotein from type 1

herpes simplex virus (see *Nature* 3 March, p.72). The gene for the protein is expressed in the bacterium *Escherichia coli*, but much work remains to be done before a vaccine becomes a practical proposition.

So there is still no cure for herpes and it looks like being some years before one comes along. In the shorter term, however, there is the prospect of new drugs following on from acyclovir, which has already proved effective in reducing the severity of infections, but cannot eliminate the risk of recurrence. **Charles Wenz**

Space Telescope

Delay as troubles mount

Washington

THE National Aeronautics and Space Administration (NASA) confirmed last week that the Space Telescope, still haunted by technical uncertainties, would not be launched until the latter half of 1986. But James Beggs, NASA's administrator, promised a congressional subcommittee that the telescope would eventually conform to all its original performance specifications.

Beggs' testimony contradicted the findings of a report sent to the House of Representatives Appropriations Committee by congressional investigators (see *Nature* 2 June, p.366). The report claimed that dust contamination of the primary mirror, and deficiencies in the fine guidance sensors supposed to aim the mirror at distant objects, had prompted NASA to ask the scientific community to accept a lower standard of precision.

At hearings last week officials from NASA and the Perkin-Elmer Corporation, which is building the mirror, said new studies of the dust particles on its surface had found that 0.2 per cent of the mirror's surface contained particles, a degree of contamination acceptable in the visible range and "marginally acceptable" in the ultraviolet range. But because of the likelihood that contamination will increase in the three years remaining before launch, the mirror will have to be cleaned. Perkin-Elmer conceded that any attempt to clean the mirror would risk damaging its coating. NASA's project office is reviewing possible cleaning methods but is expected to recommend inverting the mirror and blowing the dust away with clean dry air or filtered nitrogen.

NASA officials told the committee that design problems associated with the crucial fine guidance sensors had proved serious enough to persuade the agency to transform the first flight model, which has still not been completed, into an engineering test model, and to start work on an alternative design in case the original concept proved unworkable. Beggs said the ability of the sensors to track a 14.5 magnitude star and maintain a lock on it for 24 hours had not yet been demonstrated, but preliminary tests of the system's Koesters prism interferometers

were said to be "encouraging".

Speaking a day earlier at the opening of the Space Telescope Science Institute in Baltimore, project scientist Robert O'Dell was equally guarded about the prospects for the fine guidance sensors. He said he was confident they would operate with their specified accuracy "at least most of the time". In an interview later, he said that the Lockheed Corporation had found that the continuously moving reaction wheels used to point the telescope caused vibrations at certain speeds which would make the spacecraft tremor excessively.

O'Dell also disclosed new anxieties about the possible implications of the recent discovery that the space shuttle, and other spacecraft, emit a glow while in orbit (see *Nature* 26 May, p.282). Current speculation is that the glow is caused by the interaction of hydrogen on the spacecraft surface with residual oxygen in the space atmosphere. The glow threatens to contaminate any astronomical experiment operating aboard the shuttle. O'Dell said an experiment designed to explore the phenomenon was being planned for next year, and might result in new materials being selected for the Space Telescope.

In evidence at last week's hearings, Beggs acknowledged that NASA had not foreseen the scope of the technical difficulties the telescope project would encounter, but insisted that recent organizational changes — including the establishment of closer links between NASA and the telescope scientists — would enable the agency to complete the telescope successfully by the end of 1986.

He warned, however, that many of the problems had been unavoidable given the pioneering technology the project entailed. And he anticipated new problems when it became necessary to verify the optical integrity of the instrument prior to launch. Because the telescope is designed to operate in zero gravity, the primary mirror will be distorted by the Earth's gravitational field while it is on the ground. NASA intended to devise a number of "limited" tests that could be performed on the ground and hoped to be able to alter the figure of the mirror when it was in orbit.

Peter David

Madagascar

Western scientists back in favour

PROSPECTS for field researchers wanting to study Madagascar's unique fauna and flora appear brighter than at any time in the past decade. The island's government, after years of discouraging Western scientists, is now seeking to enlist overseas expertise to help in its conservation efforts.

The closed-doors policy started with political upheavals in the early 1970s that came to a head with a military coup in 1975. Thereafter the new left-wing government effectively barred the doors to Western scientists by refusing to grant visas for stays of more than 3 months. Overseas scientists were viewed with suspicion and there was a feeling that the country was not benefiting from their investigations. Eight years later, the government has gained more confidence in its sovereignty, and the efforts of a number of individuals — notably M. Barthelemy Vaohita of the World Wildlife Fund's Madagascar branch — have secured a change in direction.

When news of the government's change in outlook began to spread two years ago, the Department of Scientific Research on the island was flooded with more research proposals than it could cope with. The problem of evaluating the proposals was tackled at a meeting in Jersey early this year, organized by Dr Lee Durrell of the Jersey Wildlife Preservation Trust. Biologists and conservationists from six countries, together with Mme Berthe Rakotosamimanana, director of the Department of Scientific Research, agreed to set up an International Advisory Group of Scientists (IAGS) to review research proposals and make recommendations to the Malagasy authorities. IAGS, which started its work in March this year, has already forwarded three recommendations; the first expeditions to apply through IAGS could set out in August.

Although the Malagasy government is anxious to foster research that is partially oriented towards nature conservation, this condition is unlikely to exclude any sound biological research project. Dr Durrell, IAGS's chairman, says the most important condition is that copies of publications resulting from research in the country should be forwarded both to the university in Madagascar and to the government. One recent expedition was also asked to employ a Malagasy technician. **Tim Beardsley**

Correction

In last week's article "Polish pollution: Changes may come at last", the first sentence on p.567 should read: "A plea last autumn by Deputy Premier Roman Malinowski for 'close cooperation' with Czechoslovakia and the German Democratic Republic to save 60,000 hectares of threatened trees in the western province of Jelenia Gora..."

17