

## Biotechnology

# On the heels of interleukin-2

A MAJOR step nearer the commercial production of human interleukin-2 is announced today (see p.305) by Dr T. Taniguchi and his colleagues at the Tokyo Cancer Research Institute and the Ajinomoto Company. Production of this material has become the goal of many biotechnology companies, rather as was interferon two years ago.

Formerly known as T-cell growth factor, interleukin-2 can be produced naturally in the body in tiny amounts. When its activity was discovered a few years ago, it was claimed to have an important role in the growth in culture of T cells, the basis of cell-mediated immunity. Since then it has revolutionized laboratory study of T cells.

Commercial interests have, however, been stimulated by evidence that T cells can kill tumour cells and that interleukin-2 can stimulate T-cell killing of tumour cells both in the laboratory and within the body. This anticancer potential could transform the present annual \$1 million laboratory reagent business into a potential multi-million dollar pharmaceutical business. Interleukin-2 may also have potential in diseases such as leprosy in which the immune system is chronically suppressed.

The first essential step to exploitation is the production of a pure product by recombinant DNA technology. Today's description of the sequence and expression in monkey cells of cloned DNA encoding the molecule puts Dr Taniguchi's group narrowly ahead of the competitors and a short step from the goal of expression in bacteria.

Surprisingly, Dr Taniguchi's institute has not yet reached a commercial agreement on the rights to use the cloned molecule and is still discussing it with several companies. Biogen SA, which claims to be close to the stage announced by the Japanese, already has an agreement with Shionogi & Co. Ltd to carry out clinical trials in Japan once its interleukin-2 is available. Biogen's work on the molecule has been carried out by Dr Walter Fierz in Ghent (Belgium).

Sandoz, the pharmaceutical company, has contracted the Genetics Institute in Boston for work on the production of interleukin-2. The project is being carried out by a group under research director Robert Kamen in collaboration with Robert Gallo at the National Institutes of Health, Bethesda, Maryland and Dr Kendall Smith at Dartmouth College, New Hampshire. The group says it is close to having the sequence of the cloned product and is working on two separate sources of the molecule.

Other biotechnology companies in the field include Quidel, a new company in San Diego directed by David Katz, Immunex in Seattle, established largely to exploit the potential of interleukin-2 by Steve Gillis and Chris Henney, and Cetus in San Fran-

cisco. All are close on the heels of Dr Taniguchi's group.

The prospect of several competing producers of recombinant interleukin-2 may raise further problems for the patent authorities in establishing the criteria for claiming priority. One possibility is that the inevitable lengthy delay in reaching a deci-

sion would be sufficient, if interleukin-2 proves effective in clinical trials, to exploit the new molecule.

Interest in interleukin-2, however, does not stop at the molecule itself and work is under way to produce synthetic peptides that can substitute for it. Complementary approaches may follow from the recent production of a monoclonal antibody that recognizes the receptor for interleukin-2 (see *Nature*, 300, 267; 1982).

Nigel Williams

## Anthropologist fired

# Stanford plays its China card

Washington

THE ethics and obligations of Western anthropologists working in the People's Republic of China have been highlighted by the dramatic firing by Stanford University's anthropology department of a doctoral candidate, Steven Westley Mosher. The faculty's vote of 11 to 0 against Mosher is apparently unprecedented. Mosher says he will decide in coming weeks whether to sue Stanford for the PhD degree he says he has earned. "I will fight this thing to the end", he said. In the meantime, he is finishing a book, *Broken Earth*, about life in rural China. Stanford's reasons for the dismissal of Mosher as a doctoral candidate are not known, but are contained in a 47-page report by a faculty committee which neither Stanford nor Mosher will make public on the grounds that its contents could hurt "innocent parties".

The controversy revolves around bizarre tales of Mosher's conduct while he lived in an unnamed Chinese village on the Pearl River delta in 1979-80. His stay was sponsored by the respected Committee on Scholarly Communication with the People's Republic of China (CSCPRC).

Mosher's thesis for Stanford was about farming and fishing in Taiwan and he went to mainland China to study rural village life. While there, he became outraged by the practice of forced abortions for women who were seven, eight and nine months pregnant and what he alleged was officially sanctioned infanticide of girl babies in his commune.

Mosher says that in 1980 he informed Vice-Premier Chen Muhua, head of the Chinese birth control programme, about these abuses in the "naive" belief that the authorities would stop them. After leaving China, Mosher published an article about the cruelties of Chinese birth control practices in a popular Taiwan weekly. The article included photographs of women seven or eight months pregnant being prepared for abortions.

"The photographs taken by Mr Mosher during his story", wrote the Chinese authorities to Stanford, as part of the proceedings in the case, "exceeded the scope of his research topic (and) had nothing to do with any conceivable social science research topic". Mosher wrote in rebuttal:

"It is a measure of the success of my research that the Chinese Communists are so anxious to discredit it".

When complaints about Mosher's conduct in China reached members of the Stanford faculty, particularly the two anthropology faculty members who had originally endorsed the trip, the department began to investigate. The dissertation committee originally formed to review Mosher's Taiwan thesis disbanded, although Mosher says he has finished his dissertation. "I was three faculty signatures away from the PhD", he says.

Mosher's conduct while in China has also been the subject of much comment, not only by the Chinese, but by other

## Victory for Yale

Washington

YALE University has won a round in the continuing fight between universities and the federal government over "effort reporting" by faculty receiving federal research grants.

Under an agreement reached earlier this month, Yale faculty members will no longer be required to complete detailed reports on their allocation of time between teaching, research and administrative duties. Instead, they will simply have to sign a statement verifying that direct charges made to a research grant represent work done on the project.

Indirect costs, or overhead, will be reimbursed at a fixed rate based on the experience of the past few years. Previously, the reimbursement of indirect costs was tied to the amount of time faculty reported spending on departmental administration. Stanford University has a similar arrangement providing for a fixed rate for indirect costs.

The universities have opposed detailed reporting requirements, repeatedly sought by the federal Office of Management and Budget (OMB), arguing that there are no clear lines separating a faculty member's various duties. Yale became a focus of this opposition when Professor Serge Lang of the mathematics department publicly refused to comply with OMB's requirements.

Stephen Budiansky



anthropologists who were in China as well and by his former wife, who is Chinese. His alleged misdoings range from financial irregularities to smuggling, and being an intelligence agent, which he denies. The head of the Stanford anthropology department, Clifford Barnett, says the secret faculty report does not even discuss the rumour that Mosher was an intelligence agent.

Stanford interviewed Mosher's ex-wife but is not telling Mosher her present whereabouts. Under Stanford's procedures Mosher was given a chance to see the "evidence" against him and to refute it.

The incident raises questions about how anthropologists should conduct themselves in states such as China unused to having Westerners observe ordinary life.

The Stanford faculty has issued a statement saying that his publication of the Taiwan weekly article did not amount to "misconduct". The statement does, however, say that the anthropologist should be "open and honest in accounting to others in the profession about his behaviour in the field". It says anthropologists should "pro-

tect the confidentiality" of those who provide them with information and "anticipate" the impact on the populations they study of dissemination of their research. Further, the statement mentions "protecting the good name" of the discipline by "abstaining from activities while in the field that are judged to be 'illegal' in areas where they work".

Other anthropologists are sympathetic to Mosher's outrage over Chinese birth control practices, accounts of which have filtered out of China in recent months. Thus Kenneth Pruitt, president of the Social Sciences Research Council, who is familiar with the case, says that Mosher had an obligation to let world public opinion know. "But he also had an obligation to put it in perspective." Pruitt acknowledged that other factors besides the birth control issue had been important in the Stanford faculty's decision.

Says Mosher, "I never had a course in ethics in anthropology when I was at Stanford. Now they give a course in it. And you can be sure that it is thanks to Steven Westley Mosher." **Deborah Shapley**

## Fluoridation

# Verdict awaited

JUDGEMENT has now been completed in the case, which may be the first of a series in Britain, to decide whether a regional council (in this case Strathclyde) may legally add fluoride to its domestic drinking water supply. Lord Jauncey, an eminent Scottish judge, has been considering the question since last July after a petition that took a record 205 court days to hear and costs more than £1 million. It is understood that the judgement is now being typed, which may itself take some time if the volume of evidence in the case is anything to go by.

In October 1978 an interim interdict was applied for in the Edinburgh Court of Session to prevent the regional council, as the water authority, from adding fluoride to the water supply of an old-age pensioner living in Glasgow, Mrs Catherine McColl. The hearing before Lord Jauncey started on 23 September 1980: Mrs McColl made a brief appearance at the start of the petition and has not been seen since. Subsequent witnesses included the well known US opponents of fluoridation, Dr John Yiamouyannis and Dr Jean Burk, who concentrated on their contention that fluoride can cause cancer (although sundry other ailments are listed in Mrs McColl's petition). The link with cancer comes almost entirely from a study by Dr Yiamouyannis published in the journal *Fluoride* of the International Society for Fluoride Research (the journal is not refereed and Dr Yiamouyannis is a co-editor).

For the water authority an impressive range of expert witnesses argued against the claims of the anti-fluoridation lobby, notably Sir Richard Doll, former Regius Professor of Medicine at the University of Oxford and Professor J.J. Murray of the University of Newcastle upon Tyne. These and others spent many days explaining methodological flaws in the Burk-Yiamouyannis evidence and studies purporting to show that fluoride is ineffective in preventing dental caries, and also presented contrary evidence of their own.

The water authority is required by law to provide "wholesome water", but Parliament has never attempted legislation on the fluoride question — although 10 per cent of the British population now drinks artificially fluoridated water. Strathclyde will be a test case for Britain. The courts in the United States have consistently found that water fluoridation is not a violation of individual or religious liberty, and more than half the states have ruled that any infringement of freedom to act by mandatory fluoridation is minimal, compared with its value as a preventive measure.

The health authorities in Scotland that first asked for fluoridation are resigned to a long wait. Whichever side loses will appeal, and the case is likely to end up in the House of Lords. **Tim Beardsley**

## Oil pollution

# North Sea still suffering

### Brussels

In spite of the bewildering number of international conventions that have been negotiated, the voices clamouring for urgent action to clean up the North Sea are growing stronger. At the last meeting of the European Community's environmental ministers at the end of February, the West German Government put forward its suggestions for another international conference on the problem. And at the European Parliament's March session, the European Commission was urged to create a North Sea pollution police force.

Next October, the Marpol treaty will come into force, adding yet another international agreement to the Oslo, Bonn, Paris and London treaties. Yet all the evidence available, and in particular the

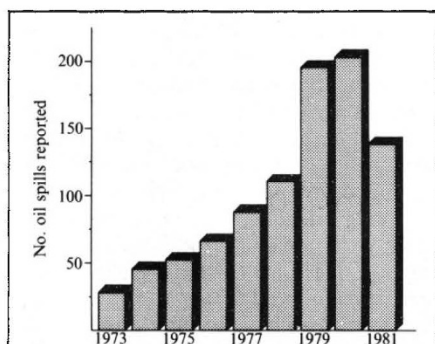
disturbing reports from Heligoland Bird Observatory, points to increases in the number of birds killed by oil pollution and the ineffectiveness of these treaties in controlling the discharges made by ships at sea.

The West German memorandum was well received by the other EEC countries. It stressed the need for intensive aerial surveillance of the North Sea to trace the origins of the oil spills, tougher fines for those caught polluting and improved technical pollution control at ports for oil and other installations. The goal of the proposed conference would be to find practical ways of compensating for the shortcomings of existing management policies.

The European Parliament proposed that ships carrying dangerous cargoes should have to carry a "black box" similar to that used in aircraft to provide an automatic recording of a ship's movements. But, as one Belgian parliamentarian pointed out, phosphates, chlorides and radioactive materials also need monitoring.

In October, environmentalists in the Netherlands will be trying to lay the blame on some of the worst offenders. An international water tribunal will present cases against major petrochemical companies. Independent jurists will be asked to judge the cases and the accused will be able to defend themselves.

Meanwhile, the *Amoco Cadiz* disaster of March 1978 is now coming to court in Chicago, where 76 Breton communities and the French Government are seeking compensation. In a comparable case in the United States, the damage claim was honoured to the tune of \$43,000 per tonne of spilled oil. **Jasper Becker**



**Oil spills:** The number of incidents reported between 1973 and 1981 in eastern Scotland, the Orkneys and the Shetland Islands (those parts of the British coastline which border onto the North Sea) and the North Sea offshore oilfields. Source: *Annual Reports of the Advisory Committee on Oil Pollution of the Sea 1973-1981*.